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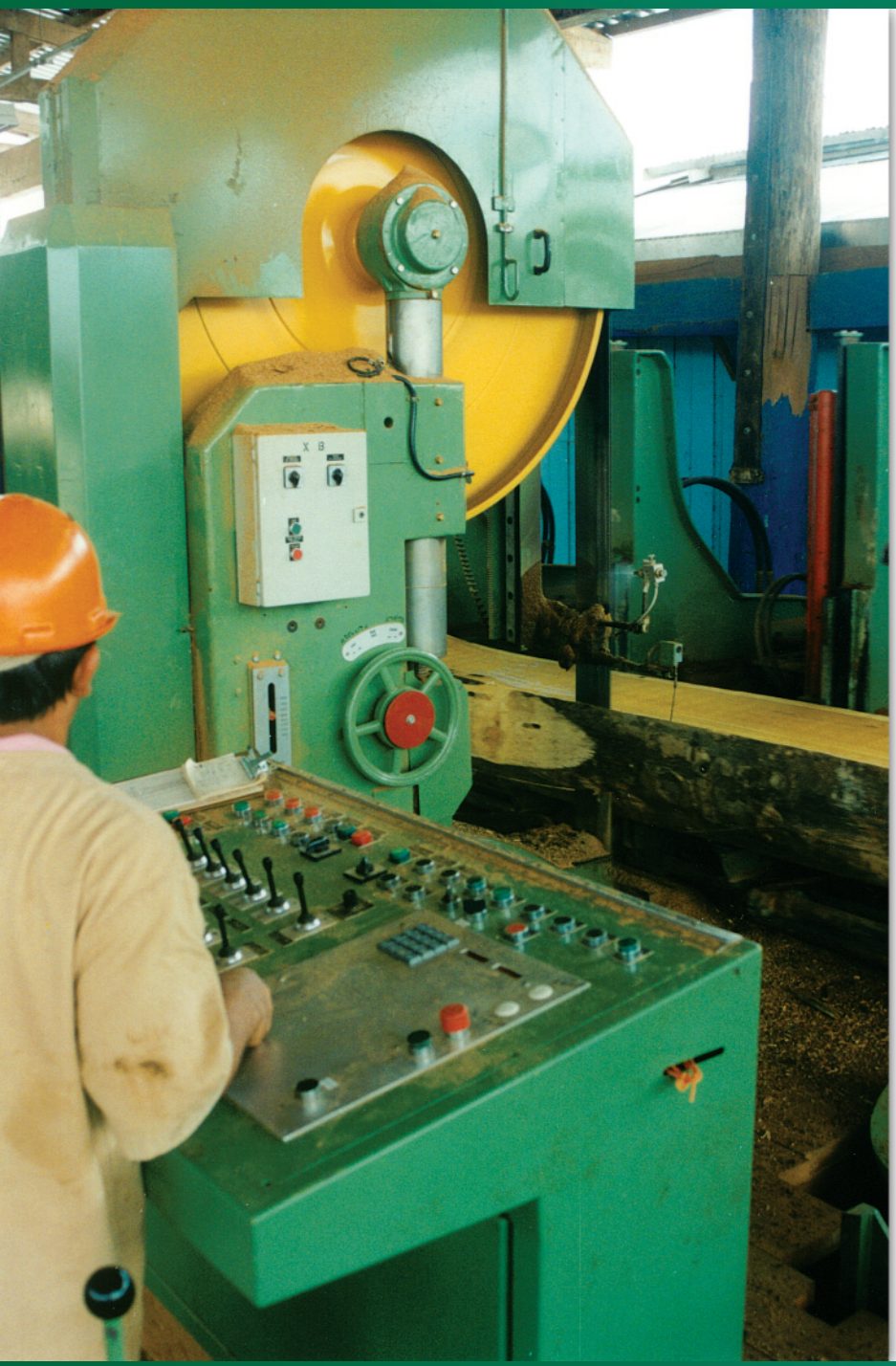
A newsletter from the International Tropical Timber Organization to promote the conservation and sustainable development of tropical forests



The process of further processing

DOWNSTREAM processing is sometimes held up as the holy grail of tropical forestry. Establish a vibrant, high-value timber processing sector and both the economy and the forests will reap the benefits.

Certainly, those tropical countries with well-developed timber-based manufacturing sectors have plenty to boast about. Malaysia, for example, now harvests more than US$1.2 billion a year in export income from further processed timber products (albeit based largely on its rubberwood resource). It may be no coincidence that its forest management is also among the most advanced of ITTO producer members. The downstream processing sectors of other countries, notably many of those in Africa and Latin America, are badly neglected.

What lessons can be learned from the success stories? According to an ITTO report conducted by the International Trade Centre (ITC; see pp 3–7), the three elements for a successful export-oriented further processing industry are a strong presence in export markets, well-developed domestic markets, and a strong primary processing sector. The report suggests that assistance from international organisations such as ITTO will be necessary to boost the sector in many countries, and it makes a number of specific recommendations.

Assistance from the international community is quite easy to justify. A healthy timber processing sector is undoubtedly good for national economies. It provides considerably more employment than the logging sector does alone and, by adding value ▶

ITTO

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Editorial Alastair Sarre
Design Justine Underwood

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Cover image The primary processing of timber—such as in this Brazilian sawmill—is a first step in adding value to the forest resource. But taking the process downstream towards the production of quality furniture and other high-value products is an important element of sustainable development. *Photo: A. Sarre.*

... Editorial continued

in-country to a raw material, can do a great deal to improve the balance of trade. Thus, there is a strong link between downstream processing and development.

The sector's role in promoting the sustainable management of natural forests is less clear. After all, if it runs out of its original resource it can always import logs and semi-processed products from cheap suppliers. Or it can replace the shrinking natural forest resource with plantations. The Philippines has a vigorous timber processing sector, but its natural forest has dwindled to such an extent that logging bans are in place over most of the country. Innovative techniques to make use of the new plantation estate are now being developed (pp 8–10). In other situations, a tight supply may encourage premature re-entry to logged forest—because idle mills lose money quickly.

But a case *can* be made for the sector's role in conservation and sustainable development. With its capacity to earn export dollars and foster a skilled workbase it addresses poverty, probably the single biggest 'root' cause of forest destruction. The many functions of natural forest—such as the supply of drinking water—will receive greater public sympathy and political attention as the wealth of the nation increases. Moreover, a strong processing sector, with its need to impress investors, will encourage the development of policies and infrastructure that deal with the long-term security of the raw material supply. In many cases, this will include maintaining a sizeable natural forest estate, because natural forest will not only provide at least part of the supply to industry—particularly for the high-value end of the market—but it also contains the genetic resources from which a plantation estate might be developed and sustained.

Thus, the promotion of downstream processing remains a key element of ITTO's work. The International Tropical Timber Council will consider the ITC report at its next meeting in May, and the issue will undoubtedly receive attention in the development of the Organization's new action plan. The process of developing the downstream processing sector will continue.

Regular readers will notice that the TFU has been given a face-lift. ITTO has been producing this newsletter now for a decade; having achieved this landmark we thought that a fresh look was both necessary and appropriate. As this editorial has pointed out in recent issues, significant progress has been made towards the conservation and sustainable development of tropical forests. But such progress is really only the beginning: our new look symbolises what we hope will be a new phase of rapid improvement towards forest conservation and a sustainable timber trade.

Alastair Sarre
Editor

Action plan revisited

The Libreville Action Plan guides ITTO as it decides its work program and reviews project proposals. The Plan lists goals for each of the Organization's three technical committees and, within these, provides a set of actions for the Organization as a whole. Moreover, it notes those areas in which the Organization may encourage and assist the activities of individual members.

The timeframe of the action plan is 1998–2001. At its most recent session, the International Tropical Timber Council requested the Executive Director to prepare a working paper on a new action plan with the assistance of two consultants. Professor Ivan Tomaselli and Mr Patrick Hardcastle were subsequently engaged and are now requesting input to the report.

The consultants believe it would be helpful if the revised action plan were to contain more closely defined priorities and targets. They also favour a greater distinction between the policy and project work of the Organization, since these two aspects of ITTO's program are subject to differing levels of control. Equally, the varying needs of different members require very different project approaches.

Comments can be sent to the consultants at the addresses below; both will attend the forthcoming Council meeting in Yaoundé, Cameroon to further solicit the views of members and observers.

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Downstream processing — drifting or dynamic?

The tropical timber industry must develop strongly if it is to contribute to both national prosperity and sustainable forest management, but it has only meandered downstream in Africa. Progress has been more rapid in Asia and Brazil

by Jukka Tissari

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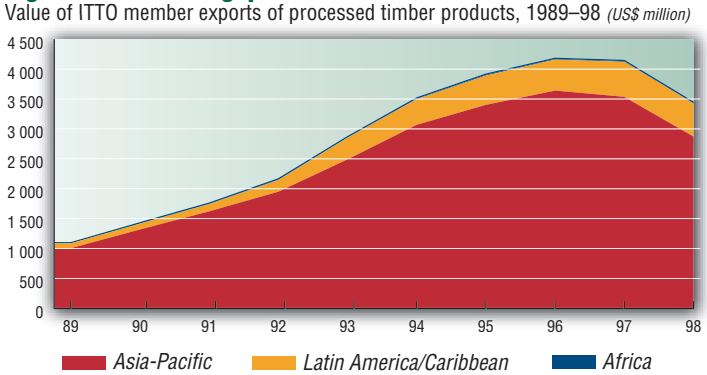
This mahogany furniture workshop in Central America is adding value to an already valuable—and relatively rare—timber. If the products from workshops such as these are to be sold into the high-value export markets, they must be of the highest quality. What role should international organisations such as ITTO play in assisting the further processing sectors in its tropical member countries? *Photo: J. Salmi, Indufor Oy*

THE RECENT Poore and Thang report on the progress of ITTO producer members towards sustainable forest management (Poore & Thang 2000) identified three broad priorities, one of which was the development of 'a flourishing timber industry within every producer country'. This may sound contradictory, since the timber industry is often seen—by environmentalists, at least—as a primary agent of forest destruction.

Yet the logic is compelling. Poverty remains the biggest threat to the tropical forests; as Poore and Thang point out, a key element for protecting large areas of tropical forest is 'making … management profitable to all concerned'. Downstream processing—the conversion of logs, sawnwood and plywood into value added products—is a crucial part of this.

In November 1999, the International Tropical Timber Council, ITTO's governing body, decided to assess the status of further processing in member countries. It initiated the pre-project study PPD 25/99 (I) and assigned the UNCTAD/WTO International Trade Centre to implement it. The study was clearly within the Organization's mandate: its Libreville Action Plan calls on it to 'promote increased and further processing of tropical timber from sustainable sources' and to 'improve transparency of the international timber market'. A draft report was submitted to the Council at its November 2000 session; this article summarises the main findings.

Figure 1: The value gap
Value of ITTO member exports of processed timber products, 1989–98 *(US$ million)*



Methodology and scope

The study was conducted between May and September 2000. It involved the collection of data from a variety of sources, including: relevant literature; national reports submitted by ITTO member governments; field visits; and a questionnaire survey sent to relevant national agencies, trade and industry associations, national manufacturer and exporter associations, and selected tropical timber processing companies. An assessment of the outlook for further processed tropical timber products was made by the author based on the collated data and the views of key players in the industry.

The scope of the study was limited to the three key product categories that form the bulk of exports of further processed wood products worldwide. These are: wooden furniture (including bamboo); builders' joinery (including doors, windows, concrete shuttering and assembled parquet panels); and profiled wood (including mouldings). The product scope is therefore more restricted than, for example, in ITTO's *Annual review of the world timber situation.*

This must be taken into account when comparisons are made between the figures reported here and those given in other sources.

Regional differences in trade

Asia-Pacific leads the way

The high point for ITTO producer timber exports came in 1996, when they were collectively worth US$4.19 billion. There was a sharp 17% decline between 1997 and 1998—to US$3.47 billion—as the Asian economic crisis started to bite. Despite the lack of comprehensive data for 1999–2000, exports by most countries are believed to have now stabilised, with some countries reporting vigorous growth.

The Asian producer countries are the overwhelming leaders in the export of further processed products *(Figure 1)*, accounting for 83% of all ITTO producer deliveries in 1998. Malaysia and Indonesia are the two top performers in the region; both reached the US$1 billion milestone in the mid 1990s. Again, the Asian economic crisis took its toll: in 1997–98, Malaysia's exports declined (by 14%) for the first time in the decade. The impact was even more severe in Indonesia, where export value declined by 35%.

Thailand and the Philippines are also significant exporters; their combined trade figure peaked at US$950 million in the financial year 1995–96. The Philippines was the only major Asian producer whose export growth continued during the economic crisis. This was due largely to the country's sustained success in the United States' market, which absorbed growing volumes of Philippine furniture during the late 1990s. The Philippine timber sector has been importing increasing volumes of American hardwoods and designing and manufacturing furniture collections that have successfully met consumer taste and requirements in the medium to high end markets of the USA.

Brazil impressive

Outside Asia, Brazil has made an impressive entry into the world trade of further processed wood products, creating an annual export flow of around US$0.5 billion in the latter half of the 1990s, up from US$65 million in 1989. In a short time, Brazil has become a supplier to reckon with: its exports are already worth more than those of the Philippines and are closing in on those of Thailand. One reason for the rapid growth was the country's successful macro-economic and currency stabilisation program in the mid 1990s; another was the creation of the MERCOSUR free trade area with Argentina, Paraguay and Uruguay. Recently, the devaluation of the Brazilian real has helped exporters win new market share. More important, however, has been Brazil's large domestic market and abundant supply of sawnwood and wood-based panels, which have sustained the growth of the furniture industry. Brazil was responsible for 83% of all Latin American exports of further processed wood products in 1998; Bolivian and Honduran exports are ranked a very distant second and third respectively. The region as a whole accounted for 16% of ITTO producer exports that year (US$552 million).

Africa has less impact

ITTO's African producer members have not been able to attain a significant presence in international markets for further processed wood products. Total exports from the region nearly tripled between 1989 and 1998 but amounted to only US$42.8 million in 1998, roughly 1% of total ITTO producer exports *(Table 1)*. Côte d'Ivoire is a leader, exporting about 50% of the region's total. Ghana is another prominent African exporter; it had a US$14 million trade in 1998. ITTO may wish to consider the regional inequality of development as one guiding principle when its Committee on Forest Industry plans its future project program.

Table 1: Cream of the crop

Total exports of further processed wood products by selected ITTO producer countries and by region, 1989–98 *(US$ million)*

Key exporters	1989	1993	1997	1998
Malaysia	320	781	1 439	1 249
Indonesia	362	984	1 148	737
Asia-Pacific total	**1 007**	**2 492**	**3 536**	**2 872**
Brazil	65	315	501	459
Bolivia	0.3	3	25	28
Latin America/Caribbean total	**81**	**361**	**585**	**552**
Côte d'Ivoire	12	15	19	21
Ghana	2	5	10	14
Africa total	**15**	**22**	**34**	**43**
All ITTO producers	**1 103**	**2 875**	**4 155**	**3 467**

Source: COMTRADE, COMEXT

Trade set to grow

The global trade in furniture and other further processed wood products has grown much faster than both world gross domestic product and the global production of these products. In furniture, for example, the ratio of exports to production worldwide rose from 17% in 1993 to 24% in 1997 and is expected to grow further to 28% in 2001–02. The trade, therefore, is in a dynamic growth phase. Moreover, developing countries have been able to expand their participation in the international trade of further processed timber products at the expense of industrialised nations.

Growth by ITTO producers above global average

It is expected that the global trade in further processed timber products will continue to expand at a healthy 9–10% per year. Actually, a slightly higher average rate was achieved during the period 1995–99 despite the Asian economic crisis. In the decade 1989–98, ITTO producer countries achieved average annual growth rates in exports of further processed timber products of 12.4% in Asia-Pacific, 23.8% in Latin America and the Caribbean and 12.7% in Africa (calculated in current US dollars). A weighted average for all ITTO producers gives a 13.5% growth rate per year over the period. This supports the prediction made in the present study that ITTO producers will maintain higher growth rates than average—perhaps 15% per year—in the medium term. Taking the 1998 figure for ITTO producer exports (US$3.47 billion) as a base, predicted average growth would see exports worth US$5.27 billion in 2001 and US$6.97 billion per year by 2003. Nevertheless, there are continuing concerns that those countries without a significant further processing industry will be unable to bridge the gap without assistance.

Export structures

Trade in furniture and parts thereof was the mainstay of further processed product exports in 1998, accounting for 64% of total value (US$2.2 billion; *Table 2*). Asian countries were by far the biggest suppliers:

Malaysia alone sold furniture worth US$911 million. The next largest exporters were Thailand (US$471 million) and Brazil (US$278 million).

Indonesia gained more revenue from the export of builders' joinery items (US$407 million) than from the furniture trade. Most (US$271 million) came from the mixed product category of 'concrete shuttering & assembled parquet panels', while doors and frames fetched US$89 million and windows and frames US$47 million. Altogether, builders' joinery comprised US$837 million (24%) of total ITTO producer exports of further processed wood products.

Profiled wood has been a major export business for countries like Malaysia, Indonesia, Thailand, Brazil and Côte d'Ivoire, and it accounted for 11% of all ITTO producer exports (US$400 million) in 1998. It is a diverse product category: in Malaysia, for example, it comprises not only general mouldings but also surfaced-four-sides goods, tongue-and-grooved wood, door stops and jambs, casings, skirtings, architraves, joinery and furniture components, and unassembled strips and friezes for parquet flooring. Entry into mouldings manufacturing is usually the very first industrial downstream processing step for sawn timber, and it can be integrated later with joinery and the manufacture of furniture and flooring.

Raw material base needs to be extended

The international timber trade is locked into a limited number of well-known species. Nevertheless, the trade of manufactured products is based on technical and aesthetic versatility, for which the use of a particular species is secondary. A well-known species may be a plus for products but may not be an indispensable requirement for acceptance by export markets.

Smaller logs, smarter technology

The production of large-sized logs from the natural forests of ITTO producer countries will continue to decline, particularly in the Asia-Pacific region. The primary and further processing industries have already started to adapt their manufacturing methods, technologies and designs accordingly. Smaller-dimension logs will be increasingly used, based on fast-growing plantations (rubberwood, *Gmelina*, *Acacia*, *Eucalyptus*, teak) and secondary natural forests. Malaysia and Thailand have demonstrated the possibilities offered by plantation wood: 80% of their furniture exports are based on rubberwood, a resource previously considered virtually useless for timber production. Brazil, meanwhile, is making strides towards establishing *Eucalyptus* as an environmentally benign material for solid wood furniture and joinery products. In Myanmar, plantation-grown teak is replacing—when end-use specifications allow—the dwindling supply of the same species obtained from natural stands.

Table 2: Product profile

Summary of further processed product export categories by selected ITTO producer countries, 1998 *(US$ million)*

Country/region	Furniture and parts	Builders' joinery	Profiled wood *(inc. mouldings)*	Total	Share % *ITTO producer total*
Malaysia	911	169	168	1 250	
Indonesia	239	407	91	736	
Asia-Pacific	**1 888**	**669**	**314**	**2 872**	**83**
Brazil	278	135	46	459	
Bolivia	9	14	5	27	
Latin America/Caribbean	**331**	**162**	**59**	**552**	**16**
Côte d'Ivoire	0.7	4	17	21	
Ghana	9	0.5	5	14	
Africa	**10**	**6**	**28**	**43**	**1**
All ITTO producers	**2 229**	**837**	**400**	**3 467**	**100**
Share % *ITTO producer total*	**64**	**24**	**12**	**100**	

Source: COMTRADE, COMEXT. Totals may not tally due to rounding.

Implications for sustainable forest management

The manufacturers of furniture and joinery seldom possess forest or carry out forestry activities. They normally add value to the primary processed products (logs, sawnwood, panels) or components, which they buy from timber traders, upstream suppliers or contractors in their supplier network. Since the primary and further processing usually take place in different locations, the physical and economic link between further processing and forest management is often weak and indirect. Nevertheless, such processors can and increasingly will influence their suppliers by demanding that they provide materials certified as 'well managed' through a verified chain of custody.

The continued growth of the forest industry, further processing and related trades predicted here has major implications for sustainable forest management. Increasing the rate of harvesting in natural forests is not feasible or desirable in many countries: a thriving, profitable timber trade will be one that adds more value to the gradually reducing harvesting volumes in natural forests and is based on sustainable forest management.

Further processing will offer new applications for the lesser-used species. However, this will entail a substantial evolution in market acceptance and in established trade flows, neither of which appears to be imminent without concerted efforts by the industry.

Reconstituted wood, whether in the form of wood-based panels or laminated (edge-glued) solid wood products, will be used in growing volumes to substitute the dwindling supplies of tropical logs from natural forests. Also, new bio-composite boards extracted from oil palm residues, coconut shells or flattened bamboo will be applied to overcome raw material shortages.

Industry structure is diverse

The manufacturers of further processed wood products come in all sizes; it is difficult to find common denominators for the diversity of industries in this sub-sector.

From handsaw to high-tech

Categories of production facilities in the further processing of tropical timber

1. Users of basic portable tools and universal woodworking machines
2. Users of basic woodworking machines to produce in small batches
3. Same as 2, but producing in larger batches, using low-cost mechanisation and jigs suitable for serial production
4. Users of special-purpose machines
5. Users of integrated machining lines

Very often, the informal domestic market is supplied by micro-enterprises (village furniture and joinery workshops, cottage industries, craftsmen), the output of which is barely recorded in national statistics.

Small and medium-sized companies (SMEs) employing 20–200 people per unit tend to be the backbone of value-added processing in most tropical countries. In Asia-Pacific producer countries, the value-added sectors are dominated by SMEs, especially in the wooden furniture sectors. Medium and large enterprises are more common in the production of mouldings, doors and other builders' joinery. This difference in industrial structure can be attributed to the fact that furniture manufacturing is largely a craft-based, product-oriented industry, while the others are process-oriented industries that apply more mechanisation and automated machinery lines.

... ITTO producers will maintain higher growth rates than average—perhaps 15% per year—in the medium term.

The Latin American region has reached a level about midway between the rapidly expanding and technically innovative processing industries in Asia and the under-developed wood industry sector in Africa. The furniture industry is the most important sub-sector; almost all the Latin American producer countries are making efforts to produce furniture for export. In Brazil, for example, around 10 000 of the existing furniture mills are very small workshops (micro-enterprises) that employ 10–20 workers. Around 3 000 are defined in Brazil as small (20–150 workers) and only 500 as medium-sized companies (more than 150 workers). The majority of furniture companies operate as separate units without vertical integration with other processing facilities.

In Africa, where further processing is still scarce, most woodworking companies have adopted a step-by-step approach for restructuring and adding value to their output. The first step is usually to produce kiln-dried planks, flooring strips or dimension lumber, and then to proceed to mouldings, finger-jointing and edge-gluing. Kiln-drying is now part of many export specifications and is an indispensable step towards further processing. There are also successful examples of more direct entry into the further processing trade, but these are all based on a massive importation of know-how—and expatriate staff—by foreign companies, which bring along both technical experience and a ready access to distribution channels.

Processing technologies

In terms of processing technologies, this study identified five levels of advancement. Of the categories listed in the box, the term 'industrial production' can only be applied to categories 3, 4 and 5. Within category 3, the use of jigs, higher quality machines, low-cost mechanisation and well-maintained simple machines makes it possible to produce interchangeable components: production units at this level of sophistication are in a position to enter export markets. Products tend to be standardised and a series of up to 500 components may be put into production. This category of firms is probably the most receptive to assistance and should be targeted for technical support by ITTO and other international organisations. Such firms are often in a position to take the crucial step from supplying only the domestic market to entering the export trade. Strengthening this type of producer could have a measurable impact on the value and volume of further processed exports.

Recommendations for ITTO

There are vast differences in the abilities of countries to tap the potential benefits of value-added manufacturing and exports. The leading producers of further processed products—Malaysia, Indonesia, Thailand and the Philippines in Asia, and Brazil in Latin America—have already established a strong presence in the export markets, and they also have fairly well-developed domestic markets and a strong primary processing industry. These three elements have proved important foundations in developing an export-oriented further processing industry. In contrast, many African and smaller Latin American and Asian producers are still struggling to strengthen their ailing primary processing sectors, to consolidate domestic markets for all wood products, and to curb the unsustainable export of unprocessed logs. They have therefore been unable to develop their export trade in further processed products.

The timber processing sectors in many countries, particularly in Africa and Latin America, therefore require outside assistance if they are to play a significant role in national development and the promotion of sustainable forest management. At the **international level**, ITTO might consider providing assistance in the following key areas of action:

- **promote sustainably produced tropical timber and the further processing of such timber in the international markets:** this can be done by advocating tropical timber as an environmentally benign raw material with many desirable properties (including in aspects of health, appearance, insulation, recycling, low energy consumption in processing, and other environmental services) not offered by substitutes such as concrete, plastics, aluminium and steel;
- **improve market and product information and export promotion:** both policy-makers and the industry need updated information on markets, prices and qualities/designs on the key further processed products and on the major end-use markets, as well as on the evolution of distribution channels, sub-contracting and networking. This would require extension in the coverage of the ITTO *Tropical timber market information service*, and a series of product- and country-specific market research projects. It could also involve the convening of regional conferences on the pertinent aspects of further processing (markets, technologies, certification and policy issues). The African Timber Organization/ITTO conference on secondary processing to be held this year in Libreville could be used as a launch-pad for more specific projects. Further, national experts and associations of further processing industries should be encouraged to participate as observers in Council sessions and in the Technical Advisory Group established by ITTO to strengthen the input of the tropical timber trade

has an economic character, because we can't forget the notion of sustainable development, that it has a strong influence on people's daily lives, and, as we all know, that the environment is also a very political issue.

The foreign ministers had met two weeks before the main meeting in Miyazaki on the island of Kyushu. They decided that indeed the time had come to make tangible progress towards sustainable development, and that this should be the platform on which environmental solutions should be based. This proposal was totally endorsed by the leaders themselves. And the leaders agreed that the issue of forests was paramount.

The role of ITTO

The leaders agreed that the G8 countries must shoulder a large part of the responsibility in solving the forests issue. They also acknowledged that international, intergovernmental organisations such as ITTO have an important role to play. The communiqué of the foreign ministers mentioned ITTO in the context of both sustainable forest management and mangrove conservation. This was proposed by the Japanese minister and endorsed by the other ministers, and was later fully endorsed in the leaders' final communiqué. We—and other countries—realise the ecological significance of mangroves. Japan has developed some good technologies in the field of mangrove rehabilitation and has assisted countries in making advances in mangrove conservation. This led us to think that we must promote this kind of work more widely. So we proposed it and we are very happy that other G8 member countries gave us strong support. The fact that mangrove conservation was mentioned in the communiqué signals that concrete support for projects in this field is likely to be forthcoming, including through the ITTO project program.

But ITTO can and should go further than mangrove conservation. It has a unique character: the principles of sustainable development are embodied in its charter and it can play an important role in promoting them. ITTO has a suite of human resource development projects aimed at teaching those second and third sons how to improve their lives without destroying the forest.

Being the host country, Japan takes a special interest in ITTO. We are one of the largest consumers of tropical timbers; when the Organization was created we believed that we should play a part in promoting a responsible trade. That was why we offered to host the ITTO headquarters. And, like every newborn, ITTO needed a kind of protector or advocate. Every host nation of an international organisation plays this kind of role. It is our conviction that we must continue to play this role; for this reason we are also taking the lead financially. But I think we can go further, we can do better in developing the notion of sustainable development.

Communication is essential

A key part of this is the dissemination of information. Information and communication technology (ICT) can, in one second, diffuse new knowledge, new ways of thinking, new convictions, to all corners of the globe, with the added advantage of instant feedback because communication should be a two-way or 'multi-way' process. Importantly, ICT doesn't necessarily need traditional basic infrastructure: we don't need to lay cables and lines, the information can be beamed in via satellite or land-based transmitters. The G8 leaders acknowledged the potential of ICT in sustainable development, and Japan for one is already actively promoting it. For example, we recently launched an ICT human resources development network in Pacific Island nations aimed at conserving mangroves.

The G8 leaders stressed that any promotion of ICT must be aimed at those countries and those people who might otherwise be caught on the wrong side of the digital divide. In that context, the G8 countries are cooperating to develop in-country human resources—the engineers, technicians, professors and teachers who will be needed if the ordinary people are to gain access to the new technologies, if they are to tap into the vast information resources that are becoming available, and if they are to be empowered to improve their lives.

The importance of culture

While many of the themes discussed at the Okinawa summit have been discussed before, there was one that was very new, I might even call it revolutionary. It was 'cultural diversity as a source of social and economic dynamism'. This again can be promoted by ICT. For example, it was reported recently that a small primary school in sub-Saharan Africa had a joint 'virtual' class with an American primary school. That kind of thing will help us to eradicate xenophobia, racism and perhaps, eventually, much of the conflict that we see today and which acts as such a powerful barrier to sustainable development.

One of our most important tasks, then, is to communicate the knowledge that all cultures possess. If we do that, maybe people like Gonbe will get the information, attain the wisdom they need to make better decisions. Then, we'll truly be on the road to a peaceful and sustainable world.

into decisions. ITTO should also keep producer countries abreast of developments in electronic commerce in the wood products sector and analyse its potential as an export promotion tool; and

- **support raw material supply-and-demand studies for a wider base of species and inputs:** ITTO should conduct detailed studies of export promotion techniques and the product-specific applicability of lesser-used species, plantation timbers and certified wood for further processing. Equally important would be to make comparative studies of the availability, prices and distribution of non-wood production materials (ie imported supplies such as machine spares, tools, lubricants, chemicals, abrasives and finishes), the distorted supply of which often poses an additional bottleneck for the development of further processing.

At the **national level**, ITTO could assist the development of further processing industries by helping to produce national status reports on trends, prospects and major constraints affecting value-added wood processors. The preparation of sector, industrial and export strategies in further processing is needed, particularly for SME development and for the organisation of national manufacturer networks to improve competitiveness in exports. Finally, ITTO should facilitate technology transfer, joint investments and the infusion of technical and design skills into the further processing industries through the provision of training courses.

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Unfolding a new technology

Introducing the F-house, a technology developed with ITTO assistance that could help solve the Philippines' housing crisis

by Florence Pascua-Soriano

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Home sweet home—the fully erected F-house. Note the tension cables (or tie-down straps) attached to ground anchors. *Photo: FPRDI*

THE PHILIPPINES has more than its fair share of natural disasters. Landslides, volcanic eruptions, floods, typhoons and earthquakes all seem to occur with tragic frequency. Such disasters can leave thousands, if not millions, of people homeless: the need for good-quality, temporary housing for such people is undeniable. Moreover, widespread poverty in the country makes the provision of affordable housing for day-to-day living an urgent necessity.

In 1997, the Forest Products Research and Development Institute (FPRDI), located at Los Baños, Laguna in the Philippines, used an ITTO grant to conduct a study tour to Fleetwood Enterprises, Inc. in Riverside, California, and Engineering Data Management, Inc. in Fort Collins, Colorado. The purpose of the tour was to investigate the manufacture, performance testing and marketing of prefabricated houses using wood and wood-based modular components.

... widespread poverty in the country makes the provision of affordable housing for day-to-day living an urgent necessity.

Following the tour, FPRDI developed an action plan to promote the efficient use of wood and wood-based building materials in the Philippines. This included:

- upgrading the FPRDI Structural Laboratory to accommodate tests of full-size house components;
- developing a shop-fabricated building technology using wood and wood-based materials; and
- implementing a research and development program to promote wood and wood-based building materials in the construction of typhoon-resistant houses.

This article reports on some of the results of this action plan.

The F-house

With support from ITTO (PROJECT PD 34/99 REV.2 (1)) and the Department of Science and Technology, the Structural Design and Engineering Section of FPRDI recently developed the 'F-house'—a *f*ast-to-build, *f*irm and *f*old-away emergency shelter.

The narrow and poor road conditions in the Philippines pose problems in delivering prefabricated houses. Therefore, all the components and joints in the F-house are assembled in the shop, packed into a casing with dimensions appropriate to local road conditions, and erected at the site.

The concept started on the drawing board and was verified and improved using a scaled-down model. Two prototype units have been fabricated, one with a timber structural frame and the other with a steel frame.

Description of the technology

The F-house is erected as quickly as a tent and is specifically designed for the temporary refuge of calamity-affected families, as a depot and distribution centre for food and other emergency supplies, and to house other relief operations such as attending to the medical needs of victims. Like a tent, this shelter can be folded, packed, stored and used repeatedly. Unlike a tent, however, it has a floor that can be mounted on specially designed prefabricated footings. The height of the footings can be adjusted when the terrain is not flat. Doors and windows, similar to those in site-built houses, render the F-house more secure than a tent. Inside, the F-house offers the comforts and amenities of a permanent house because it has been structurally designed to resist

weathering, extreme temperatures, winds and other harmful natural forces. It can comfortably house a family of five.

Figure 1 shows an exploded view of the F-house, including roof, wall and floor panels, structural frames, and footings. The photo on page 8 depicts the house when fully erect.

In an emergency ...

The F-house is delivered to the site in a 1.0 x 2.4 x 2.6 m rigid case which can be placed at the back of a trailer or, if many units are required, on a low-bed truck. The case is placed on prefabricated footings and levelled. It can then be unfolded and erected into a 2.4 m x 4.8 m house in just one hour or less by four medium-built, unskilled workers using only simple carpenter's tools.

When the shelter is no longer needed, it can be easily folded back and packed into the rigid case and stored in a space approximately 5 times smaller than its actual size in service. The walls, floor and roof are sheathed in wood-wool cement board panels that are resistant to weather, termites, fungi and fire. These are fixed and fastened using specially designed lightweight metal sections. Provisions for power supply are integrated into the design.

Built-in strength

The structural design of the F-house required detailed analysis and engineering to consider critical loads at four points. These are: (i) when the roof, wall and floor components are folded and packed in the rigid case of the house; (ii) when the house is transported; (iii) when the house is unfolded and unpacked from the case and then mounted on prefabricated footings; and (iv) when it is in service. Hence, it can be said that having been more rigidly designed, the F-house will equal or even outlast permanent shelters as long as it is adequately maintained.

Production costs

Table 1 shows the estimated costs of the F-house compared to those for permanent shelters with equal floor, wall and roof areas. It suggests that the unit cost of producing the prototype units is within the currently acceptable range of low-cost housing. Nevertheless, mass production should lower the costs significantly.

The F-house arrives in its case ready for 'unfolding'. *Photo: FPRDI*

Advantages of the F-house technology

The F-house can be acquired instantly. Low-cost houses using traditional and recently emerging technologies usually take 2–3 months from planning to construction. Hence,

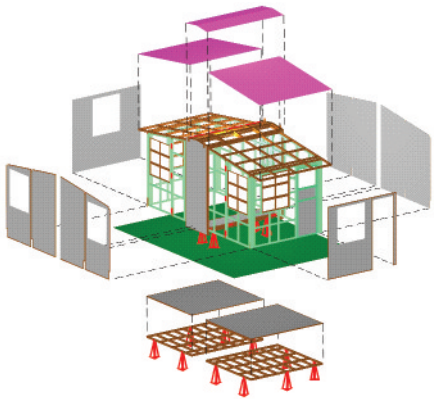
Table 1: Cheap alternative

Total direct costs of producing prototype F-houses and equivalent permanent houses *(Philippine pesos)*

Type of shelter	Prototype F-houses		Permanent houses	
	Wood-framed, wwcb roof, wwcb double wall, wwcb floor boards*	*Steel-framed, wwcb roof, wwcb double wall, wwcb floor boards*	*Single wwcb walls with wood stiffeners, elevated reinforced concrete slab, galvanised iron roof with ceiling*	*Concrete hollow blocks walls, elevated reinforced concrete slab, galvanised iron roof with plywood ceiling*
Site preparation	–	–	412	412
Earthworks	–	–	350	1 575
Pre-cutting/forming *(&other material preparations)*	1 575	3 150		
Foundation/footing	2 800	2 800		
Column			5 357	16 061
Floor	8 902	6 675	10 506	
Casement	9 220	7 914		
Wall	14 934	12 670	30 735	21 440
Roof	10 015	8 265	11 108	11 108
Ceiling			4 323	4 323
Assembly	2 062	6 850		
Fenestrations	6 555	6 330	7 101	7 101
Finishing	3 702	5 463	8 970	11 067
Electrical	3 012	3 012	3 012	3 012
Connectors/locks	3 700	2 820		
Others	6 681	13 957	2 422	3 922
Total	**73 159**	**79 906**	**84 297**	**80 022**
Cost per m²	6 350	6 936	7 317	6 946

**wwcb = wood-wool cement board; wwcb used for double walls on frames are 8–12 mm thick whereas for single walls with stiffeners they are 50 mm*

a)



b)

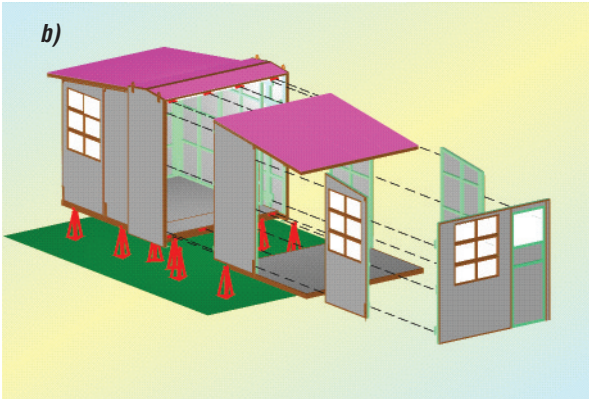


Figure 1: Deconstructing the construction
An exploded view of the F house showing **a)** the roof and wall structural frames *(center)*, the roof, wall and floorboards *(top, side and bottom)*, and the floor structural frame and footings *(bottom)*; and **b)** the constructed interior of one half *(left)* and the connections between components *(right)*

buying the F-house is like buying time when a comfortable and safe refuge is needed urgently.

The wood-wool cement board panels used as roofing and wall boards in the prototype units have excellent heat-insulating properties compared to the galvanised iron roofing sheets typically used in most low-cost shelters in the Philippines. Thus, the indoor temperature in the prototype F-house is more comfortable compared to that in a permanent shelter with a galvanised iron roof.

End-users can be assured that the F-house technology is well planned and engineered. Shop fabrication allows more adequate supervision so that only quality-tested materials and specialised labour skills are used; in contrast, workers on site-built houses are exposed to the weather and may not have adequate supervision. It has been shown that damage to houses during typhoons is due mainly to poor workmanship and less to the lack of durability of materials. Some builders circumvent the national structural and building codes in order to save costs, resulting in substandard houses that fail during disasters and aggravate the enormous housing backlog in the Philippines.

… the F-house will equal or even outlast permanent shelters as long as it is adequately maintained.

On-site erection of the F-shelter takes only an hour at the most and requires only unskilled workers using simple tools. Other prefabricated houses cannot be built on site without semi-skilled or skilled workers.

Further work

The two prototype F-house units are currently being showcased at the FPRDI campus in Los Baños, Laguna. The prospects are good for their mass-production: existing industries with the equipment and facilities are already showing an interest. The next step therefore is for an industry collaborator to conduct pilot-scale production trials. Simultaneously, several improvements in the concept will be worked on. These include:

- expanding the house to multiples of its original dimension, with minimal wastage and disturbance to the original core shelter;
- integrating sanitary and water supply lines;
- the selection of alternative materials/components in order to reduce the weight of the house (currently about 800 kg) such that a few men will be able to remove it from the trailer or truck and mount it on the footings without the use of forklifts or other machines; and
- mounting the rigid case on a chassis such that each unit can be transported on wheels: the 'mobile F-house'.

From a marketing viewpoint, F-houses are likely to prove popular for other purposes, including as classrooms, field offices and beach houses. To protect its technology, FPRDI must set guidelines and limitations on its use and define the responsibilities of technology adopters and end-users.

The value of local ingenuity

Housing is one of the main priorities of the Philippines' government; because of this, we are experiencing unprecedented growth in the house construction industry. A notable trend is the inflow of foreign builders, mostly from countries with industrialised construction systems, bringing in state-of-the-art materials and technology used in structural systems other than the commonly used post-and-beam. Panelised systems, light frame construction systems and prefabricated components are slowly gaining acceptance.

However, we cannot and should not rely on foreign technology to solve all our problems. In the F-house, we have made use of local and international ingenuity to create a product tailored to local conditions. We believe that it has the potential to contribute significantly to disaster relief, help address the housing shortage, and boost economic growth. It also makes use of the country's growing plantation resource and adds value to our forestry sector.

Simplifying the management of farm forests

A project in northwest Ecuador is developing a twofold approach to the management of farm forests on community lands

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The river Cayapas as seen from the community of San Miguel in Esmeraldas, northwest Ecuador. This river, which is settled by Chachi and Afroecuadorian communities, crosses the buffer zone of the Cotacachi Cayapas Ecological Reserve. *Photo: W. Palacios*

THE BUFFER zone of the Cotacachi Cayapas Ecological Reserve (RECC) in northwest Ecuador is a biodiversity hotspot. Individual and group use—as opposed to community use—of the forest is common in this zone and must be accounted for in rational land use planning.

The Sustainable Use of Biological Resources Project (SUBIR) has worked in Esmeraldas since 1991. It aims to conserve biodiversity by protecting the reserve and improving the livelihoods of people living in the buffer zone through sustainable natural resource management. Funded by the United States Agency for International Development (USAID) and managed by CARE, the project has five components: organisational strengthening and institutional development; policy and legal issues; biodiversity monitoring; improved land use; and commercialisation and marketing.

SUBIR components work at the community, regional and national levels. At the community level, the basis for all activities—after support for land legalisation—is the integrated land use management plan elaborated in a participatory process with community members. Local knowledge in combination with remotely sensed information is used to zone community lands. A typical community where SUBIR works comprises natural production forest, a reserve, secondary or intervened forest, and individual/family areas. Project activities include technical assistance in forest management, agroforestry systems, small animal management and other possible productive activities; community strengthening; biological monitoring; and commercialisation of timber and other local products. Key to each component is community participation and training. Community para-technicians include biologists, foresters, agroforesters and legally trained community members.

The Ecuadorian non-governmental organisation Fundación Jatun Sacha, a partner with CARE in the project, is in charge of carrying out the improved land use component.

Forest management in small farms

The initial focus of forest management has been the elaboration of management plans in the community production forest area; these follow a relatively standard procedure (see Thomas & Jolitz 2000). However, within most of the communities where SUBIR works, the harvesting of farm forests is important. These farms are almost always located near rivers or bigger streams, sometimes in remote areas of the forest. They seldom have defined boundaries; as well as individual farms, loosely defined family/group harvest areas are common. This has necessitated alternative, simpler approaches to maximise uptake of rational joint forest management.

Transport to and from communities is normally by river; subsistence needs are fulfilled by hunting, fishing, gathering and by cultivation—mainly of plantain, banana, yucca and rice. The most important form of individual cash generation is often the sale of logs; in addition, cacao and other agricultural products, handicrafts and gold are traded.

Some innovative approaches to the management of small, isolated blocks of tropical forest have been documented (eg in Costa Rica; Maginnis et al. 1998), but these have been on relatively flat terrain with road access. Poor access, difficult terrain, the (at times) undefined limits of individual farms, low timber prices, the variable needs of farmers and an understaffed national forest service combine to make

such approaches more problematic in the Esmeraldas region.

Forest harvesting practices vary between Afroecuadorian and Chachi communities; nevertheless, timber extraction is traditionally done by manual labour, using the river system to transport the logs. Softwood logs are rolled or pushed/pulled on small-diameter timber rails or rollers to watercourses, then floated out to major rivers. More valuable hardwoods are sawn in the forest by chainsaw, carried to watercourses and floated downriver by raft.

The key to the widespread adoption of the guidelines is their simplicity. They have been formulated as four questions to which the farmer should answer yes before cutting a tree …

In many communities, traditional mechanisms regulating individual and group forest harvesting are reaching breaking point. Increasing populations, a greater reliance on the cash economy, and a continual demand for timber have led to the over-exploitation of accessible forests. This began with more valuable timbers such as chanul (*Humiariastrum procerum*) and guayacan (*Minquartia guianensis*) but has continued with softer timbers used for plywood and shuttering.

Any attempt to improve forest management under these conditions must take into account:

- the fact that there are often no maps or boundaries that define the total management area of a farm or family harvesting area;
- the low profitability of forest management; and
- the technical limitations of traditional harvesting methods.

Two complementary approaches

The approach of SUBIR to introducing rational forest management outside community forests is twofold:

- the development of farm management plans; and
- the application of simple guidelines for tree selection.

The reason for the twofold approach is pragmatic. Although the ideal in the long term is probably extensive coverage by management plans that are implemented with appropriate forest service involvement, reality dictates the need for an interim approach allowing immediate improvements to family and group harvesting practices. Merely the delimitation of all the farms would involve a long complicated process of social work with the communities and huge amounts of fieldwork, for which the financial and human resources of the Ecuadorian Forest Service and development projects working in the region are insufficient. For this reason, the simple guidelines are designed to achieve immediate improvements in harvesting practices, even where management plans have not yet been developed.

Farm forest management plans

The project has created standard format plans that can be tailored to the needs of the individual farmer; fieldwork and plan elaboration is then carried out by the farmer in consultation with a project forester. It is intended that community para-foresters in conjunction with farmers will continue future plan elaboration once project activities have concluded.

The plan format includes the demarcation of the whole farm into land reserved as permanent forest and that set aside for agriculture. The forest area is divided into 'coupes' to facilitate information gathering and the scheduling of harvesting activities. All these boundaries follow prominent topographic features or permanent paths, for the following reasons:

- the survey of these features is much faster than the opening up of straight lines in the forest (see Jolitz 2000);
- the boundaries, once established, remain easy to identify in the future, even when the survey marks have disappeared;
- the mapping of farm perimeters and natural limits in the permanent forest area give precise information about the major topographic features of the farm, necessary in the planning of traditional harvesting operations; and
- the boundaries are used as reference lines for obtaining information about tree location during the stock survey. This reduces the need to open up systematic survey lines as a basis for fieldwork.

Once the farm and its forest is zoned and mapped, a stock survey of all trees over the minimum cutting diameter is carried out; information about species, size and quality is recorded. Tree position is noted on a base map, particularly in relation to neighbouring trees and to topographic features that could facilitate or obstruct manual extraction.

The management plan aims to instill basic yield regulation and to reduce logging impacts. Yield regulation is based on the definition of a minimum cutting diameter of

Critical distances

It can be assumed that the spatial distribution of the larger trees in tropical old-growth forest with relatively homogeneous climatic and edaphic conditions follows a random pattern (Jonkers 1987). The expected distance of a tree to its nearest neighbour for this kind of spatial distribution can be calculated as a function of tree density (Krebs 1989).

For a density of five trees per hectare, we calculated that this distance would be close to 25 m. The interaction of guidelines 3 and 4, for which this distance was used, together with the protection zone for the abundant streams, is therefore expected to result in an intermediate harvest intensity (Sist 2000) of not more than 5 out of the 12–15 big trees usually found per hectare in the old-growth forests of northwest Ecuador. The two guidelines together ensure a good distribution of harvested trees over the area. Raising the logging intensity in some sites with clumps of valuable commercial species and averaging with sites where no logging takes place is not possible.

Of course, there will be deviations from the random spatial distribution in small blocks of tropical rainforest, even if the random pattern is true for the whole forest. For the more likely aggregated pattern, restrictions on harvesting intensity will probably be more severe than for a random pattern.

The number of remnant big trees per hectare will decrease steadily over time. Once the accumulated volume is removed, harvesting will depend on the in-growth of trees in the diameter class above minimum cutting diameter, with yields as little as 1–2 trees per hectare over a period of 15–20 years. According to our projections, we expect a similar decrease in numbers of big trees and yields for the first cutting cycles of the larger community forests under the current management plans.

60 cm dbh (diameter at breast height), which is recommended for tropical lowland forests by Maginnis et al. (1998) when no specific growth data are available. The maximum percentage of all trees of a species above this diameter that can be extracted is 60%.

These rules-of-thumb have been applied successfully in Costa Rica. Nevertheless, they will be improved with modelling and in the light of experiences gained during the implementation and monitoring of community forest management plans. Logging impact is reduced by limiting the maximum number of trees to be extracted to five per hectare and by protecting stream banks and steep slopes. Recommendations based on information from extensive community forest inventories are incorporated; for example, specific protection of regeneration is required for those species with irregular diameter class distributions.

The low standard of formal education in the region and the low profitability of natural forest management exacerbated by very poor national timber prices mean that technical and financial support in the development of management plans is necessary. More than ten plans have been written for farm forests in the pilot community and the response of farmers has been good. It is obviously important that they see an economic benefit for instituting management. The commercialisation component of SUBIR has tried to maximise profit margins, including through work with a network of forestry producers to support direct sales to national timber buyers. The training of farmers and community para-foresters is a key to long-term success.

Simple guidelines

Simple guidelines have been developed to complement farm plans and to allow immediate improvements in harvesting practices across the region on farms where management plans have not yet been developed. We wanted guidelines that were simple enough for each farmer to apply without the need for technical assistance and we also wanted a cost-effective monitoring mechanism whereby SUBIR or forest service staff could assess adherence to the guidelines.

The key to the widespread adoption of the guidelines is their simplicity. They have been formulated as four questions to which the farmer should answer "yes" before cutting a tree:

1) is the dbh of the tree 60 cm or more?
2) is the tree more than 5 m from a stream that is wider than 3 m?
3) is there another big tree (dbh ≥ 60 cm) within 25 m?
4) is the next stump of a big tree (dbh ≥ 60 cm), produced by cutting more than 25 m away?

The first question is, in effect, a simple yield regulation criterion. Although this alone cannot prevent the slow deterioration of the harvested forest, it offers nearly sustainable yields for species with negative exponential diameter distributions, once the accumulated volume of large-diameter trees in old-growth forests has been extracted.

The second question ensures a small protection zone for the generally small but very frequent permanent streams in remaining accessible forest. The third question is framed with the aim of maintaining the structure of the harvested forest, with well-distributed seed and ecological trees *(see box)*.

The fourth question attempts to limit logging intensity, which is closely related to the extent of damage (Sist 2000). Often, all merchantable big trees in easily accessible sites are harvested using traditional harvesting methods. This creates large gaps and damages the remaining stand. Question 4 ensures that the big trees can be harvested only step by step by introducing a kind of temporal regulation of harvesting. For example, if a group of four trees with dbh ≥ 60 cm stands inside a circle of 25 m diameter, and there is no stream wider than 3 m, only one of these trees can be harvested. The second tree can be harvested after the stump of the first is decomposed (which might be in 10 years or more, depending on wood density and the operational criteria used to define 'decomposed') and the third after the stump of the second is decomposed. The last tree must be left until the stump of the third tree is decomposed and another tree with a dbh ≥ 60 cm has established itself inside a circle with a radius of 25 m around it. The harvesting period for these four big accessible trees has been spread over at least 30 years.

The Afroecuadorian community of Playa de Oro, located on the banks of the river Santiago in Esmeraldas, northwest Ecuador, owns 10 000 hectares of tropical rainforest and shares boundaries with the Cotacacho-Cayapas Ecological Reserve. These forests represent the last buffer between highly disturbed forests and the Ecological Reserve. *Photo: W. Palacios*

Although the guidelines offer a minimum cutting diameter and some regulation of harvesting in space and time, they do not offer any explicit protection of endangered but valuable tree species.

Although the guidelines offer a minimum cutting diameter and some regulation of harvesting in space and time, they do not

Dawn over the river Santiago in the province of Esmeraldas, northwest Ecuador. The canoe is still the principal mode of transport in this remote area. *Photo: W. Palacios*

offer any explicit protection of endangered but valuable tree species. The new Ecuadorian forest law, which incorporates these guidelines with slight modifications, puts a total ban on six species and allows the harvesting of 13 other species only with an approved management plan. One way to avoid the creaming of more valuable species not otherwise protected might be to establish a maximum proportion that these species represent in total harvested timber. This proportion could be defined using inventory data and the results of growth projections.

The guidelines can be followed by the farmers without technical assistance. The only tools necessary are a wooden rule to check tree diameter and a rope 25 m long (with a knot at 5 m) to check the distances.

Control by sampling

Third-party monitoring can be done with the same tools, although if a tree has been cut below breast height the controlling forester will need to judge whether it originally had a dbh above 60 cm. If it is not possible to visit all harvesting areas, a monitoring system based on sampling must be used, perhaps on the basis of farmer associations. This should also lead to a kind of self-monitoring by farmers within an association, as the non-compliance of one member could lead to economic disadvantages or legal problems for all members.

The response of the local people to these ideas will depend greatly on the economic benefits they can achieve by following one of the two management approaches in their forests, and on the effectiveness of the monitoring system in distinguishing those farmers who actually follow the norms from those who don't. Adequate communication of and training in these approaches is also essential.

One way to avoid the creaming of more valuable species not otherwise protected might be to establish a maximum proportion that these species represent in total harvested timber.

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Conserving the Condor

Work is now under way to create and sustain a large 'peace and conservation' reserve on the Peru/Ecuador border

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IN 1998, Mr Alberto Fujimori, then President of Peru, visited Tokyo, Japan. One of his meetings was with itto's then-Executive Director, Dr Freezailah. The discussion centred on a proposal for forest conservation on the border between Peru and Ecuador and heralded an acceleration in conservation initiatives between Peru and its neighbours.

The region in question—the Condor mountain range—had been the subject of a long-running territorial dispute between Peru and Ecuador; in a new era of peace, the idea was to dedicate the area to conservation and to find sustainable livelihood options for the people living there. Soon after the meeting, ITTO funded a small pre-project (PPD 7/99 REV.1 (F)) to investigate the region and to formulate project proposals for the development of a transboundary conservation reserve. The pre-project was implemented by Conservation International with the support of the Peruvian National Institute for Natural Resources (INRENA) and the Ministry for the Environment of Ecuador in coordination with the Natura Foundation.

The Ecuadorean part of the proposed reserve covers about 770 000 hectares and is inhabited by about 88 000 people comprising three ethnic groups (mestizos, Shuar and Saraguros). It includes tracts of slightly disturbed or undisturbed natural forests, particularly in the watersheds of the Coangos and Nagaritza rivers and the upper reaches of the Condor Range. The Shuar communities in these watersheds have a subsistence economy based on hunting, fishing, product-gathering and farming activities. Their desire to access the market and thus improve their standard of living has led them to exert pressure on the environment, threatening the high conservation status of the forests. In the Santiago River watershed, also on the Ecuadorean side, colonisation has led to the conversion of forests into pastures and agriculture, despite the fact that the soils are not well suited to these uses.

On the Peruvian side, some 1.64 million hectares, including the watersheds of the Santiago, Cenepa and Comaina rivers, are dedicated to the new transboundary conservation reserve. The boundaries encompass the territories of the Aguaruna and Huambisa indigenous communities, which together comprise some 25 000 people. The landscape is mainly mountainous and hilly and strongly dissected, and the climate is characterised by cloudiness and very high rainfall. The area constitutes a key element in the hydro-biological cycle of the region, because it is a merging point for the Andean and Amazon regions and is an important refuge for many taxonomic groups and species.

During the implementation of the pre-project, both the Ecuadorean and Peruvian sides carried out several activities, including:

- biophysical characterisation of the area and development of thematic maps;
- preliminary socio-economic studies;
- institutional diagnosis;
- preliminary outlining of proposals for areas of special conservation value;
- consultation and training workshops. Training workshops on land management and conservation areas were held in Ecuador for the leaders of the Federation of Shuar Centres, the presidents of Condor Range associations, and representatives of Shuar centres. In Peru, consultation and training workshops were organised for the Urakusa community, an information workshop was held for the community of Soledad, a zoning workshop was conducted in Puerto Galilea, and another workshop was held for the community of Mamayaque; and
- country-level dissemination of the information collected through the above studies.

On the Peruvian side, local communities carried out diagnoses of the socio-economic and environmental issues, identifying problems and proposing solutions. The pre-project engaged two indigenous technicians, one from the Aguaruna community and the other from the Huambisa community, who actively participated in pre-project activities; the field work was also carried out with the support of two local guides. All those involved, including the technical team, benefited from the exchange of knowledge and experience between the various parties.

The pre-project developed project proposals to carry on the initial work. Subsequently, the International Tropical Timber Council (ITTC) adopted and funded two 5-year projects—one in each country—titled 'Bi-national peace and conservation in the Condor Range region, Ecuador–Peru'. Phase I of the projects, valued at about US$2 million, will formulate master plans for conservation and development in the region, including land management and zoning.

The participation of the Aguaruna and Huambisa communities in the pre-project underscored the need to strengthen the capacity of community leaders and indigenous technicians. During Phase I, training will be offered to community people in biodiversity monitoring, sustainable development and conservation, and leadership skills.

Similar transboundary conservation initiatives have been proposed elsewhere. For example, at its last meeting the ITTC approved and funded a US$1 million project to develop a conservation area between Peru and Bolivia, and another reserve has been proposed between Peru and Brazil. ITTO is also funding the development of transboundary reserves in the other tropical regions.

Translated from the Spanish by Claudia Adan.

Briefing on ITTO's project work

The projects and pre-projects described below were financed at the 29th session of the International Tropical Timber Council held in Yokohama, Japan last November

Conservation and development in the natural protected areas system of Tambopata (Peru) – Madidi (Bolivia) (Peru and Bolivia; PD 17/00 Rev.1 (F))

Budget (Phase 1)

ITTO:	US$969 563
Government of Bolivia:	US$56 000
Government of Peru:	US$56 000
Conservation International:	US$193 209
Total	**US$1 274 772**

Implementing agency INRENA (Peru) and SERNAP (Bolivia) in cooperation with Conservation International and with the participation of local organisations

Funding countries Japan, USA

The System of State-Protected Natural Areas (SPNA) of Tambopata–Madidi comprises the Tambopata Candamo Reserved Zone and the Bahuaja Sonene National Park in Peru and the Madidi National Park in Bolivia. The first, 2-year phase of this project will involve the collection of environmental and socio-economic information on the SPNA and its incorporation into a geo-referenced database. This will form the basis of coordinated participatory processes between the two countries to ensure the planning and management of conservation areas and the development of sustainable economic alternatives such as ecotourism and, in buffer zones, the supply, processing and marketing of forest products.

Management of Kayan Mentarang National Park (KMNP) to promote transboundary conservation along the border between Indonesia and the Malaysian states of Sabah and Sarawak – Phase I (Indonesia; PD 38/00 (F))

Budget

ITTO:	US$1 187 930
Government of Indonesia:	US$187 278
Total	**US$1 375 208**

Implementing agency Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry and Estate Crops

Funding countries Switzerland, Japan, USA

The conservation values of the 1.4 million-hectare KMNP in East Kalimantan are threatened by cross-border illegal logging and hunting. This 2-year project will establish an operational management unit for the KMNP and initiate a process for cooperation between Indonesia and Malaysia in order to conserve the Park's biodiversity values. Project activities will include the construction of a limited park infrastructure, a biodiversity expedition and a public and local communities' awareness program.

Reforestation pilot project for the recovery of degraded areas in the Medium Doce River region, State of Minas Gerais, Brazil (Brazil; PD 62/99 Rev.2 (F))

Budget

ITTO:	US$808 698
IEF/MG*:	US$177 910
Total	**US$986 608**

Implementing agency *State Forestry Institute of Minas Gerais (IEF/MG)

Funding countries Japan, USA

This project will implement a pilot reforestation program for both timber production and soil protection using native and exotic forest species on 570 hectares of degraded land in the Medium Doce River region. It will serve as a demonstration area for uptake by rural communities and will provide training in seedling production along with education on the importance of forests for production and protection.

Productive forest management for the rural reserve area of Guaviare (Colombia; PD 32/99 Rev.1 (F))

Budget

ITTO:	US$617 318
Government of Colombia:	US$373 800
Total	**US$991 118**

Implementing agency Corporación de Ordenamiento Territorial Sinergia

Funding countries Japan, USA

This 3-year project will provide support for the implementation of a management plan covering the 0.5 million hectare Rural Reserve Area of Guaviare. Specifically, it will: provide information and training to rural families on the establishment of successful forestry, agroforestry and sylvo-pastoral systems; implement demonstration plots to test forest production options for increasing the capacity of rural families to manage their natural resources; and zone areas for forest management, forest rehabilitation and protection, and agriculture.

Developing and extending criteria and indicators for sustainable management of natural tropical forests in China (China; PD 12/00 Rev.1 (F))

Budget

ITTO:	US$334 119
Government of P.R. China:	US$145 405
Total	**US$479 524**

Implementing agency The Chinese Academy of Forestry

Funding countries Japan, Switzerland, Australia, Republic of Korea, USA

This 3-year project aims to develop criteria and indicators for the sustainable management of natural forests in China based on ITTO's *Criteria and indicators for sustainable management of natural tropical forests*. It will analyse current initiatives in criteria and indicators and conduct comparative studies of the forest situation on Hainan Island and in Yunnan Province.

Operational strategy for sustainable forestry development with community participation in India (India; PD 37/00 (F))

Budget

ITTO:	US$594 678
Government of India:	US$632 300
Total	**US$1 226 978**

Implementing agency Indian Institute of Forest Management

Funding countries Japan, Republic of Korea

The purpose of this 2-year project is to implement an appropriate set of criteria and indicators for sustainable forest management in eight selected forest management units (forest divisions) in Madhya Pradesh. The objective is to create conditions for, and thus help achieve, sustainable forestry development in the state, which in turn will serve as a model to be replicated in the rest of the country.

Training of trainers in the application of ITTO and national criteria and indicators for sustainable forest management at the forest management unit level (Indonesia; PD 42/00 (F))

Budget

ITTO:	US$550 448
APHI*:	US$121 193
Total	**US$671 641**

Implementing agency *Association of Indonesian Forest Concession Holders (APHI)

Funding countries Japan, Republic of Korea

This 2-year project will develop a curriculum and training module for the education of concessionaire personnel in sustainable forest management based on the ITTO and national-level criteria and indicators. It will train at least 300 'trainers' within forest concession companies across five regions of Indonesia, who will then form the basis of a database of expertise at the national level to be maintained by APHI.

Management and conservation of mangrove forests in the Gulf of Fonseca, Honduras (Honduras; PD 44/95 Rev.2 (F))

Budget

ITTO:	US$1 012 200
Government of Honduras:	US$279 000
Total	**US$1 291 200**

Implementing agency Administración Forestal del Estado – Corporación Hondureña de Desarrollo Forestal

Funding country Japan

This 3-year project aims to reduce the dependency of the local population on mangrove forests for fuelwood by assisting them to establish fast-growing tree plantations in buffer areas. It will also

develop a zoning and land use plan for the Gulf of Fonseca with a view to managing and conserving the mangrove resource.

Evaluation of mangrove forests in the northeast of the Orinoco Delta region in Venezuela with a view to sustainable forest utilisation (Venezuela; PD 55/98 Rev.2 (F))

Budget ITTO: US$249 455
MARN-DGSRF*: US$80 982
Others: US$33 320
Total **US$363 757**
Implementing agency *Ministry for the Environment and Natural Resources – General Sectoral Directorate for Forest Resources
Funding countries Japan, USA

The Orinoco River Delta contains a variety of tropical tidal forests, particularly mangroves, but they are being rapidly depleted for building materials and fuel. This project aims to define conservation and management policies for the coastal mangrove forests of the region. It will also develop a management plan for bringing 30 000 hectares of mangrove forests under sustainable management for the benefit of local communities.

Improved living standard for the people through community participation in sustainable forest management (Cambodia; PPD 22/99 Rev.1 (F))

Budget ITTO: US$77 121
Government of Cambodia: US$23 000
Total **US$100 121**
Implementing agency Department of Forestry and Wildlife
Funding country Switzerland

This 1-year pre-project will be implemented in the District of Banteay Meas and Angkorchey, Kampot Province, in an area of around 3 900 hectares that has been allocated to community forestry. The pre-project will increase awareness among communities, NGOs, field foresters, forest administrators, policy makers and other stakeholders of the importance of community participation in sustainable forest management.

Promotion of sustainable utilisation of rattan from plantation in Thailand (Thailand; PD 24/00 Rev.1 (I))

Budget ITTO: US$292 457
Government of Thailand: US$337 500 (in kind)
Total **US$629 957**
Implementing agency Forest Research Office, Royal Forest Department
Funding country Japan

This 3-year project will develop and disseminate knowledge and technologies to promote the sustainable management and efficient utilisation of rattan, an important trade commodity for forest dwellers that is now in short supply due to over-exploitation. The project will establish two demonstration plots: Sakon Nakhon province in the northern part of Thailand for the harvesting and utilization of rattan shoots; and Krabi province in the southern part of Thailand for the sustainable management of rattan shoots and canes.

Market information service for tropical timber and timber products, phase IV (PD 16/93 Rev.4 (M))

Budget ITTO: US$300 000
Total **US$300 000**
Implementing agency ITTO Secretariat
Funding countries Japan, Switzerland

This project continues and further develops ITTO's market information service for tropical timbers. The service provides regular reports on prices, trade and news relevant to the tropical timber trade, links importers and exporters, and strengthens ITTO's data collection network.

Model communication and public awareness program for sustainable forest development in Ecuador (Ecuador; PPD 13/99 Rev.1 (M,F,I))

Budget ITTO: US$54 500
COMAFORS*: US$6 000
Total **US$60 500**
Implementing agency *Corporacion de Manejo Forestal Sustentable
Funding source Bali Partnership Fund

This pre-project will undertake a survey and use other information sources to assess attitudes towards sustainable forest development. It will determine the most appropriate means and activities for disseminating information on forests and forest management to the public and produce a project proposal to facilitate implementation of an education/communication strategy for Ecuador's forests.

Development of a project proposal for the economic valuation of production forests and agroforestry systems in the Peruvian Amazon (Peru; PPD 13/00 Rev.1 (M))

Budget ITTO: US$37 980
INRENA*: US$10 000
ICRAF**: US$10 000
Total **US$57 980**
Implementing agency *National Institute for Natural Resources in cooperation with the **International Centre for Agroforestry Research
Funding countries Switzerland, USA

This pre-project will develop a project proposal for the economic valuation of environmental goods and services derived from forest management and agroforestry systems in the Peruvian Amazon. It will also convene a multi-institutional workshop on the subject with the participation of experts from the Amazon region.

Strengthening the Annual Market Discussion (PPD 14/00 (M))

Budget ITTO: US$42 000
Total **US$42 000**
Implementing agency ITTO Secretariat
Funding countries/institutions USA, Australia, ITTO Trade Advisory Group

The Annual Market Discussion is held in conjunction with each May session of the International Tropical Timber Council. This 2-year pre-project will strengthen the Discussion by supporting keynote presentations from specialists commissioned to research and report on elements within the agreed theme.

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Japan
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North Asia's ups and downs

by Michael Adams and Jairo Castaño

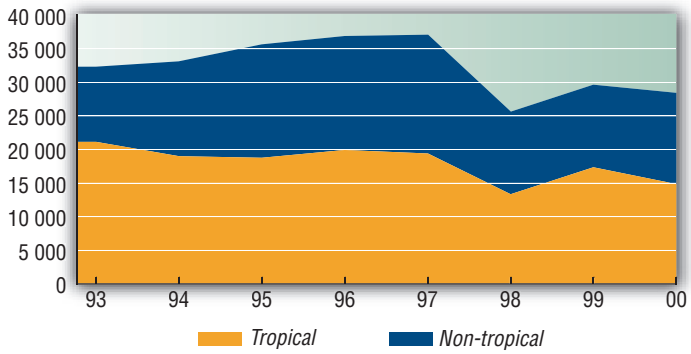
ITTO Secretariat

Yokohama, Japan

TODAY, Japan and China are the world's top two importers of tropical timbers. That makes north Asia pretty important to the sector. But the two markets are moving in very different directions: imports are plummeting to earth in Japan but are sky-rocketing just across the Japan Sea.

Figure 1: Japan imports

Primary timber products, 1993–2000 *('000 m³ roundwood equivalent)*



The contrast between these two timber giants—in their consumption patterns, their market structure and their trading style—is having a major impact on the global timber trade. And with it comes new challenges for manufacturers and traders.

What's happening in Japan (and Europe)

Japan was the world's largest importer of tropical timber in 2000, with 15 million m³. China took in 11 million m³, while the European Union imported around 10 million m³ led by Italy, France, the UK and Belgium.

Primary tropical timber products (logs, sawnwood and ply) have been losing market share to temperate hardwoods and softwoods and non-wood substitutes for many years. Worldwide, the market share of primary tropical timber imports has fallen from around 24% in 1993 to 16% in 2000. The decline has been particularly noticeable in Europe and Japan.

Even in Japan, where tropical timber has a larger share of the timber market, primary products lost about 7% of market share between 1993 and 2000. This decline can be attributed to tighter log supplies and the slowdown in house-building as a result of the economic recession. Moreover, Japanese manufacturers are increasing their use of softwoods, particularly in plywood production.

Figure 1 illustrates the trend in Japanese imports over the past eight years. The effect of the 1997–98 Asian financial turmoil on imports can be clearly seen, as can the comparatively rapid recovery of softwood imports.

According to recent forecasts by the Timber Supply and Demand Conference, a group of Japanese importer associations and representatives of the main timber-producing countries, demand for imported wood products is predicted to fall again this year in Japan. Demand for logs and plywood are thought likely to be down 3% and 6.7% respectively on 2000, while demand for lumber could be up marginally (by 1.3%). The share of logs in total imports of wood products is currently over 50% by volume but is expected to drop marginally.

The Japanese domestic timber industry is undergoing change: the consumption of logs by domestic mills continues to decline while the demand for finished products is growing steadily. From discernable trends, the production of softwood plywood will increase while tropical hardwood plywood production will continue to decline. The demand for tropical hardwood logs used for lumber is forecast to decline by around 14.3% this year.

Russian log imports are expected to continue dominating the import scene; nevertheless, a 1% decline from 2000 is forecast. Log imports from New Zealand and Chile for crating and packaging lumber are also expected to fall but demand for radiata pine for plywood should increase. Japanese imports of European lumber should grow to 2.3 million m³ this year. The whitewood market is well established and analysts feel that redwood kiln-dried products are now also established in the market; these fit perfectly with recent demand changes in Japan, which now favour redwoods for high-value end uses. For Europe, the main concern for 2001 is the strengthening of the euro, since exports were driven by a weak euro in 2000.

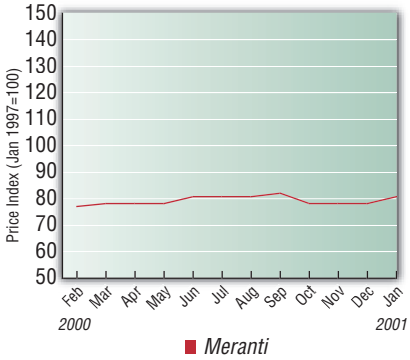
And In China?

China provides some sharp relief to the general story of decline. It is, in fact, the world's fastest-growing market for tropical timber products. Already, the country imports more tropical than temperate timber.

Chinese timber imports have doubled since 1993. This increase is the result of many factors including explosive growth in per capita consumption, especially related to construction and housing development, and a comparatively strong yuan. But per capita consumption is still well below that of the developed economies, suggesting potential for continued growth. The global average annual consumption of timber per capita is around 0.68 m³, while China's is

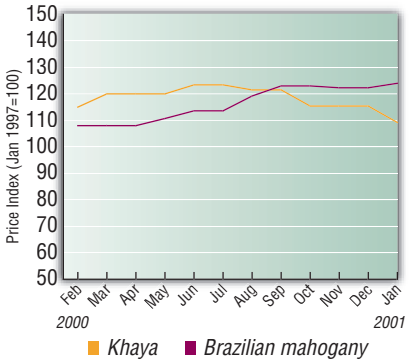
SE Asian meranti

Trends in tropical sawnwood FOB prices



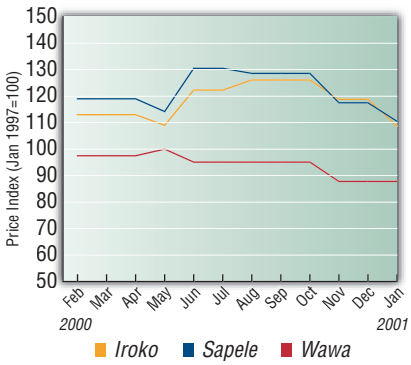
African and Brazilian mahogany

Trends in tropical sawnwood FOB prices



West African hardwoods

Trends in tropical sawnwood FOB prices



only 0.12 m³, or less than one-fifth the world average. Nevertheless, consumption rates are rising quickly in cities such as Shanghai, Beijing and Guangzhou and may not be far off the world average by now.

China's tropical timber imports are expected to continue to grow, linked to the pace of economic growth. While the market share of tropical timber products fell between 1993 and 1996, this trend has reversed since 1997 and most analysts expect tropical timber imports to continue rising. The question is, will the pace be sustained?

China's timber markets changed significantly last year, especially during the fourth quarter. Prices for imported timber were steadier than in previous years, although prices for some high-priced timbers declined significantly. The price of beech, for example, declined by 30%.

By now, most provinces will have disposed of the bulk of domestic timber stocks following last year's imposition of felling restrictions for forest protection reasons. The annual cut in domestic forests has been severely reduced; accordingly, a major surge in demand for imports can be expected, probably towards the end of the first quarter of 2001.

Word of caution

There are very mixed views on the future pace of growth in China's timber imports. Analysts focus on projections of economic growth and the expansion of disposable income, especially by urban Chinese. However, a word of caution regarding the level of domestic production may be worth sounding. While domestic production will fall drastically in the short term, the unknown factor could be production from Chinese plantations. At a recently concluded conference *(see pp 24–25 of this edition)*, a report on China's plantations revealed some startling figures (although these, too, should be treated with caution—*see p 24*). China has huge areas of man-made forests. The last national inventory identified 59 million hectares, with a standing volume of 12.5 billion m³. In recent years, the plantation area has been expanding at a rate of 4 million hectares per year; the total estate has nearly doubled in the last 20 years to 54 million hectares. The area of high-yielding timber plantations is now around 8 million hectares, which is about 15% of the country's modern timber plantation estate.

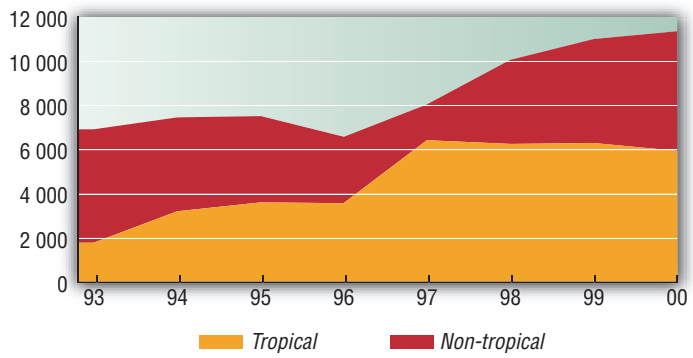
China's development of fast-growing and high-yielding timber plantations has obviously made great progress. But problems still remain to be resolved, especially in relation to low stock volumes and yields, which are reportedly well below world norms. A concerted effort to improve plantation productivity would yield handsome results and could lower estimates of future import demand for certain types of wood products. Further complicating the picture is the question of how fast the expanded availability of domestically manufactured composite products such as MDF and OSB will generate a shift in consumer demand.

Last hurrah?

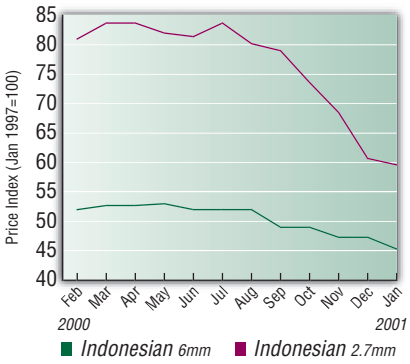
Those of us who expected 2000 to be a year of recovery for tropical timber were disappointed. The engines of consumption in the old-world economies failed to ignite; without the strength of China's growth, the picture would have been very sad. Maybe Japan's economy will turn around and we'll see that market grow again—although it is unlikely to soar to the giddy heights of the late 1980s. But for now, China is the brightest light: is it, in fact, the last hurrah for the tropical timber trade? Or can the sector reform itself to meet the expectations of increasingly competitive markets?

For an analysis of the medium and long-term outlook for the Chinese market, readers are referred to the report of a recently concluded ITTO PROJECT (PD 25/96 REV. 2 (M))—see TFU 10/1 and www.forestry.eazier.com

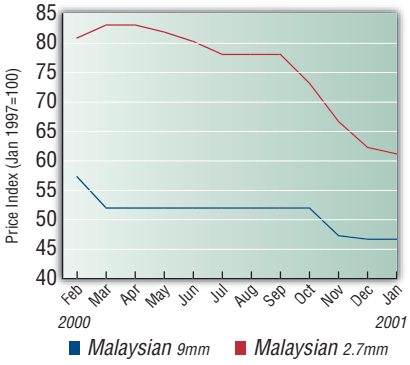
Figure 2: China imports
Primary timber products, 1993–2000 *('000 m³ roundwood equivalent)*



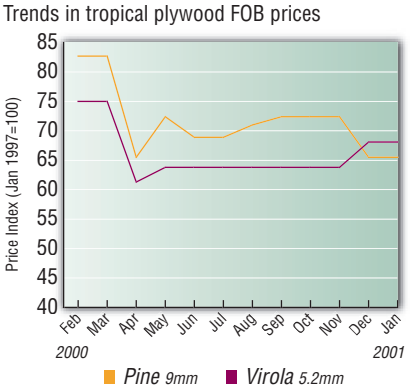
Indonesian plywood
Trends in tropical plywood FOB prices



Malaysian plywood
Trends in tropical plywood FOB prices



Brazilian plywood
Trends in tropical plywood FOB prices



Country profile — Republic of Korea

by Ma Hwan Ok

ITTO Secretariat

Yokohama, Japan

THE KOREAN peninsula, comprising South and North Korea, is located in far-east Asia, bordered to the north mostly by China and partly by Russia and separated from Japan to the east by the Korean Strait. Korea has a temperate climate characterised by summer monsoons and freezing, continental winters. Seasonal changes are gradual but distinctive: spring and autumn are relatively short while summer and winter are rather long.

People and economy

The Republic of Korea—which occupies the southern part of the peninsula—has a population of about 47.4 million people, growing at a rate of just under 0.9% per year. Its gross domestic product (GDP) per capita was US$10 550 in 1997; in purchasing power parity terms this was 46% that of the United States. North Korea has a population of about 21.4 million and an estimated GDP per capita in 2000 of US$994.

Forests

Korea's forests can be categorised broadly into three types: warm temperate, cool temperate and alpine. Dominant timber species in the cool-temperate zone, covering a large part of the Korean peninsula, are *Pinus koriansis, P. densiflora, P. thunbergi, Quercus, Betula, Zelkova* and *Fraxinus*. The Republic of Korea has a forest area of 6.4 million hectares (1998 figures), which is 65% of the total land area; North Korea's forest estate is estimated at about 8.5 million hectares.

In the Republic of Korea, national forests comprise 22% of the forest estate and are managed by the central government through 25 national forest stations. Most have 'permanent' status and are being managed for timber production, soil, water and biodiversity conservation, scientific research, and the preservation of historical relics and cultural heritage. Provincial forests are owned by local governments and account for about 8% of the forest estate. The ownership of the remaining 70% of the forest estate is distributed between about two million people, including individuals, families and cooperative groups.

One of the main obstacles to sustainable forest management is the large number of fragmented small forest holdings in the private forests. Few are being managed sustainably and suffer from low economic returns due to a combination of labour shortages, high wages and low timber prices.

Greening experiences

By the end of the Korean War (1950–53), Korea's forests were completely devastated. Until the early 1970s, the effects of such devastation were horribly apparent: large, eroded and unproductive hillsides, muddy rivers carrying away the wealth of the land, and people walking for days to gather the fuelwood they needed to meet essential cooking and heating needs. In 1973, the government embarked on its first Ten-year Forestry Development Plan to quickly green the denuded lands. Under the plan, nation-wide reforestation projects were launched to plant trees in the devastated forests and around villages, workplaces and schools. These projects were very successful, due largely to the high degree of cooperation between government and the private sector, facilitated by the 'new community movement' (Saemaul Undong), a successful rural development program.

Forest policy

The Republic of Korea is currently implementing its fourth Forest Basic Plan for the period 1998–2007. It conforms to regulations contained in the Forest Law (as amended in 1994) that explicitly list the criteria for the assessment of sustainable forest management. These criteria are highly relevant to those developed by the ITTO, Montreal and Helsinki processes.

The Korean Forest Service, which serves under the Ministry of Agriculture and Forestry, is currently involved in a number

Table 1: Korea's log imports by country ('000 m³)

Year	1985	1991	1993	1995	1997	1999
Tropical hardwood						
Indonesia	12	–	–	–	–	–
Malaysia	2 308	3 086	968	807	376	350
Philippines	67	–	–	–	–	–
PNG	841	493	838	735	443	380
Solomon Islands	–	76	189	255	207	99
Others	–	76	190	82	–	278
Sub-total	***3 228***	***3 731***	***2 185***	***1 879***	***1 026***	***1 107***
Coniferous						
USA	1 494	2 687	1 276	772	754	325
New Zealand	99	1 786	2 147	2 994	3 417	3 235
Chile	514	425	902	1 539	1 472	354
Russia	–	–	581	719	924	891
Australia	–	–	368	18	496	366
Others	–	–	188	408	117	345
Sub-total	***2 107***	***4 898***	***5 462***	***6 450***	***7 180***	***5 516***
Grand total	**5 335**	**8 629**	**7 647**	**8 329**	**8 206**	**6 623**

Sources: Korean Forest Service 2000; ITTO 2000

of policy initiatives, including: reforming the forest legal and administrative systems; promoting economically sound sustainable forest management; improving planning for forest conversion; preventing forest fires; and enhancing forest cultural activities such as recreation.

Public work project on forest tending

At the end of 1997, Korea was hit by a severe economic crisis that created, among other problems, a high unemployment rate. In 1998, the government initiated a forest project to engage unemployed people in silvicultural work such as weeding, pruning and thinning in national forests. This project is scheduled to finish in 2002. During the period 1998–99, 7.6 million people were hired at a cost of US$192 million. The project has greatly increased public awareness of the environmental benefits of forests. In addition, sustainable forest management issues such as the improvement of tending technologies have attracted strong media interest. In line with a growing recognition of the forests, 'The movement for enhancing forests for life', a forest-related non-governmental organisation, was established in 1998. This movement is promoting the establishment of model forests to demonstrate tending and monitoring.

Green lottery

In May 2000, the government launched a new lottery program called the 'Green Lottery' to secure funds for enhancing the environmental functions of forests—the first winner received about US$90 000. The campaign message for selling the lottery is simple: 'buying a ticket is the same as planting a tree'.

Timber trade

The annual consumption of timber and timber products in Korea has been maintained at 25–27 million m^3 since the mid 1990s (apart from 1998, when consumption dipped due to the economic crisis). Most domestically grown timbers are of small or medium diameter, due largely to the young age of the forests, and are unsuitable for plywood production; only about 5% of total timber demand is met by domestic sources. The Korean timber industry is therefore a large importer of logs. Until 1990, the bulk of supply comprised tropical hardwoods imported from Indonesia, Malaysia and Papua New Guinea *(Table 1)*. However, tropical timber imports have declined since then: they made up 73% of total log imports in 1985 but only 13% in 1999; in the main, market share has been lost to pines from New Zealand and Chile.

International cooperation

The Korean International Cooperation Agency (KOICA), which was established in 1991, supports sustainable forest management in developing countries. KOICA funds annual training courses on reforestation and forest management for foresters from developing countries through the Korean Forest Service. Korea also provides financial assistance to developing countries through relevant international organisations; for example, it has been a member of ITTO since the Organization was created in 1987 and began financing project work in 1997. The Korean Forest Service conducts regular meetings of forestry committees with some tropical timber-producing countries including Indonesia, Myanmar and Vietnam to further extend technical collaboration in the forest sector. The Korean Forest Research Institute is also involved in collaborative research in the Asia-Pacific region.

This photo, taken some time in the 1970s, shows workers carrying seedlings for planting on a denuded hillside in South Korea. The massive forest restoration program conducted after 1973 arrested soil erosion and re-established South Korea's forest estate. *Photo: Kim El-Soon (courtesy Forest Culture Pictures Exhibition)*

To contribute to the conservation of natural tropical forests and to ensure a stable supply of raw materials to the timber industry, six private Korean-owned companies initiated an overseas plantation investment program in 1993. By 1999, these companies had established some 32 271 hectares of forest plantation in seven countries including Australia, Indonesia, Vietnam and the Solomon Islands. According to the long-term investment plan, a total of 1 million hectares of forest plantation will be established by 2050, expected to supply 50% of Korea's timber demand.

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ITTO 2000. *Annual review and assessment of the world timber situation 1999.* ITTO, Yokohama.

More information on the forest sector in Korea can be found on the Korean Forest Service web site at www.foa.go.kr and the Korean Forest Research Institute web site at www.kfri.go.kr

Fellowship report

Enforcing Bolivia's forestry laws

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MY DOCTORAL thesis aims to provide a comparative overview of forest management law enforcement and institutional efforts to enforce the law in European and Central and South American countries. The research has been conducted in four countries—Brazil, Bolivia, Costa Rica and Finland—where new forest management laws have been adopted.

An ITTO Fellowship funded my field-study trips to Bolivia and Costa Rica, where I gathered forest law and related law-enforcement documents and conducted interviews with forest policy makers, law enforcers and other organisations related to the forest sector. This report focuses on the Bolivian case-study. In late 1999 I travelled to Santa Cruz and La Paz and three different forest areas in the country: a currently logged forest area, an intact forest area, and a forest regeneration area.

Bolivia's previous laws

Bolivia established forest regulation in 1939, but forest management is a new experience for the country. Forest management plans for forest exploitation have been required since 1974 under the country's first comprehensive forest law (Decreto Ley N° 11.686 of 14 August 1974). The problem with this law was a lack of implementation due to the weakness of the forest administration agency, which was short of trained personnel and financial resources, and the negative attitude of the forest industries toward the forests.

In order to end the chaotic situation of unplanned logging operations, the Bolivian government established two measures:

1) an 'ecological pause' ('Pausa ecologica'). This 1990 initiative had two main objectives: the prohibition of new forest concessions for a 5-year period, and the classification of forests according to use, taking into consideration aspects of conservation, protection and production; and
2) the Bolivian environmental law of 1992. In terms of forest resources, the law called for forest assessments to be made as the basis for forest management plan development and forest conservation.

The fact that these two attempts failed completely in their aims can be attributed to several reasons:

- either corruption or negligence on the part of the department responsible for implementing the laws;
- a lack of institutional capacity;
- a lack of political will or interest in implementing the laws;
- a scarcity of trained personnel;
- a lack of financial resources; and
- a lack of specific measures to be taken in case of non-compliance.

The new forest law

After a comprehensive evaluation of existing forest-related legislation, Bolivia adopted a new forest law, Law N° 1700 (hereinafter referred to as 'the forest law'), on 12 July 1996. Its objective is to regulate the "sustainable utilisation and protection of forests and forest lands for the benefit of present and future generations, harmonising the social, economic and ecological interests of the Nation" (Article 1).

The advent of the forest law brought remarkable changes to the administration of forests and forest control, which make the Bolivian case interesting and important. In terms of its regulatory approach, the forest law set out to resolve a number of chronic problems.

Problem 1: Overlap of responsibilities within the agency in charge of administration and forest control. The lack of coordination made it difficult to cope with all tasks.

ITTO Fellowships Offered

ITTO offers fellowships through the Freezailah Fellowship Fund to promote human resource development and to strengthen professional expertise in member countries in tropical forestry and related disciplines. The goal is to promote sustainable management of tropical forests, the efficient use and processing of tropical timber, and better economic information about the international trade in tropical timber.

Eligible activities include:

- participation in short-term training courses, training internships, study tours, lecture/demonstration tours and international/regional conferences;
- technical document preparation, publication and dissemination, such as manuals and mongraphs; and
- post-graduate studies.

Priority areas: eligible activities aim to develop human resources and professional expertise in one or more of the following areas:

- improving the transparency of the tropical timber market;
- improving the marketing and distribution of tropical timber species from sustainably managed sources;
- improving market access for tropical timber exports from sustainably managed sources;
- securing the tropical timber resource base;
- improving the tropical timber resource base, including through the application of criteria and indicators for sustainable forest management;
- enhancing technical, financial and human capacities to manage the tropical timber resource base;
- promoting increased and further processing of tropical timber from sustainably managed sources;
- improving the marketing and standardisation of tropical timber exports; and
- improving the efficiency of tropical timber processing.

In any of the above, the following are relevant:

- enhancing public relations, awareness and education;
- improving statistics;
- research and development; and
- sharing information, knowledge and technology.

Selection criteria: Fellowship applications will be assessed against the following selection criteria (in no priority order):

- consistency of the proposed activity with the Program's objective and priority areas;
- qualifications of the applicant to undertake the proposed fellowship activity;
- the potential of the skills and knowledge acquired or advanced under the fellowship activity to lead to wider applications and benefits nationally and internationally; and
- reasonableness of costs in relation to the proposed fellowship activity.

The maximum amount for a fellowship grant is US$10 000. Only nationals of ITTO member countries are eligible to apply. The next deadline for applications is **29 August 2001** for activities that will begin no sooner than December 2001. Applications are appraised in May and November each year.

Further details and application forms (in English, French or Spanish) are available from Dr Chisato Aoki, Fellowship Program, ITTO; Fax 81–45–223 1111; itto@itto.or.jp (see page 2 for ITTO's postal address).

Solution: The forest law clearly separates the responsibilities between different agencies. The Ministry of Sustainable Development and Planning is responsible for drafting policies; the Forest Superintendency for forest control; and the National Fund of Forest Development for financial matters.

Problem 2: Instability and a lack of qualified personnel in the forest administration, and corruption.

Solution: The law established the Forest Superintendency, the decisions of which are independent of political parties. The position of the superintendent is appointed over the political mandate, which lends stability to the position. Qualified forestry technicians and professionals comprise some 64% of the personnel—previously, administrative personnel had dominated forestry administration. The Forestry Superintendency started to privatise forest control in 1999 to avoid corruption and to improve forest control.

Problem 3: Excessive paperwork centralised in the federal government, insufficient democracy in the decision-making process, inequitable distribution of forest profits, and not enough information about illegal forest activities.

Solution: The law empowers local governments, prefectures and municipalities to make decisions on the use and control of their forest resources. (Nevertheless, some studies have shown that local governments often lack the institutional capacity or will to undertake the tasks entrusted to them by the law.)

Problem 4: The public did not have enough input into forest control.

Solution: The forest law empowers civil organisations to perform complementary roles in forest control. The law allows any person to check field operations by an authorisation called the 'visit permit' ('libramiento de visita') in order to ensure the forest laws are implemented.

Problem 5: The short-term nature of logging concession contracts—these were available for a maximum of 20 years, but commonly for a mere 5 years—meant that forest owners were unwilling to invest time and money in forest management.

Solution: The forest law sets out a forest concession system with a minimum period of 40 years.

Problem 6: The existence of 'informal' (illegal) logging, and a lack of a legal basis for logging on communal lands ('tierras comunitarias de origen').

Solution: The forest law extends forest concession rights to local community groups ('agrupaciones sociales del lugar'), thereby legalising 'informal' loggers. The law also gives exclusive logging rights to indigenous people within their legally recognised territories.

Problem 7: The professionals responsible for developing forest management plans were not liable for their truthfulness and accuracy. By the same token, the public servants responsible for forest control were not subject to any sanctions for unlawful performance.

Solution: The law establishes sanctions for forest engineers and public servants responsible for the control of forest activities. Forest engineers take an oath of 'public faith', which gives them special authority in return for promising to tell the truth. Thus, forestry professionals have become accountable via civil and criminal processes. Similarly, public servants who fail to perform their duty according to the forest legislation will be dismissed or subject to criminal prosecution.

International cooperation

Besides the innovations of the 1996 forest law, which brought effective changes, international cooperation has played an important role in developing and implementing the forest legislation. Several organisations and institutions have collaborated with the Bolivian government in many different forms. For example, ITTO supported forest laws by promoting the National System of Forestry Information. The USAID-supported Sustainable Forest Management Project—Proyecto de Manejo Forestal Sostenible (BOLFOR)—has been significant in developing methods for the sustainable use of forest resources.

The need for economic incentives

All regulatory efforts are limited in usefulness without economic incentives for sustainable forest management. But Bolivia does not yet have such incentives. On the contrary, long-term bank credit lines favor agricultural and cattle-ranching activities, and governmental subsidies for reforestation often spur the conversion of natural forests into forest plantations. Similarly, the Bolivian tax system does not encourage forestry. Other factors that hamper the regulatory approach are insecure forestland tenure and a lack of forest culture in the country, which have led the people to undervalue the forest.

Nevertheless, forest certification has been an important tool. Bolivia leads Latin America in certified forest area, with a total of 720 743 hectares certified by July 2000. Forest certification is also a promising tool for complementing the Forest Superintendency's forest control regarding the inspection of forest management.

In sum, the new forest law is a big step forward in building respect and trust in the forest sector and among the forest industry, forestry agencies and local people. Once Bolivia can implement economic incentive measures, it will be close to achieving the goal of sustainable forest management.

A more detailed summary of this research, including footnotes, is available from the author on request.

Fellowship reports available

The following ITTO fellowship reports are available on request from the authors.

Evaluation of the performance of planted native timber species in different ecological zones in Ghana

Contact: *Mr Ernest G. Foli, Scientific Officer, Forestry Reseach Institute of Ghana, University PO Box 63, Kumasi, Ghana; efoli@forig.org or efoli@hotmail.com*

Capacity building of forest user groups in community forest management: a case-study in the Dolakha district of Nepal

Contact: *Mr Gopal Kumar Shrestha, Department of Forests, Babar Mahal, Kathmandu, Nepal; gkshrestha@hotmail.com*

Rural communities, urban growth and the conservation of water resources in the upper Chagres, Panama

Contact: *Mr Lenín S. Riquelme, Project Management Specialist, US Agency for International Development (USAID/Panama), PO Box 6959, Panama 5, Panama; lriquelme@usaid.gov*

Prospects of tissue culture for improving teak plantations

Contact: *Dr Doreen K.S. Goh, Plant Biotechnology Laboratory, Innoprise Corporation Sdn. Bhd., PO Box 60793, 91017 Tawau, Sabah, Malaysia; dorngoh@pc.jaring.my*

International Conference on Timber Plantation Development

7–9 November 2000

Manila, the Philippines

Report by Mike Adams and Efransjah

ITTO Secretariat

Yokohama, Japan

We probably shouldn't be surprised. But to once again see demonstrated that accurate inventory and statistics—a cornerstone of forestry—are a rare commodity is a sad reflection on our profession.

At this conference hosted by the Philippines Management Bureau and sponsored by ITTO, the perennial problem of data inaccuracy surfaced early on. Compare this quote: "five countries have (each) established more than 10 million hectares of [forest] plantations: China 21.4 million hectares … India 12.4 million" with: "During the past 20 years the total area of timber plantations [in China] reached 53.992 million hectares …" and: "The cumulative area of forest plantations [in India] from 1951 to 1999 is 31.21 million hectares".

Is it an omission that improving plantation statistics was not mentioned in the conference recommendations? Or is it simply an acceptance of the fact that we foresters cannot count?

The different sources vary in their estimates by as much as 100% for China and over 200% for India! Is it an omission that improving plantation statistics was not mentioned in the conference recommendations? Or is it simply an acceptance of the fact that we foresters cannot count?

Despite such extraordinary discrepancies, the conference provided evidence that other facets of plantation science are progressing at a rapid pace. An impressive array of technical papers were presented, covering such topics as the latest developments in tree improvement technologies, nursery practices, integrated pest management, logging practices and marketing. Good papers were also presented on key economic and policy issues.

The scene was set by two overviews, one from ITTO on the world timber supply and demand scenario, government interventions, policies, issues and problems and another by the Food and Agriculture Organization of the United Nations (FAO) on current trends and developments in plantation forestry in Asia-Pacific.

Setting the scene

According to the ITTO presentation, the total value of world trade in forest products, which fell some 3.9% between 1997 and 1998, increased by an estimated 5% in 1999 to about US$140 billion. A further improvement in trade is anticipated for 2000. This recovery in trade reflects moderate improvements in demand in Asian markets, better prices for some products, and strong growth in North American and European economies.

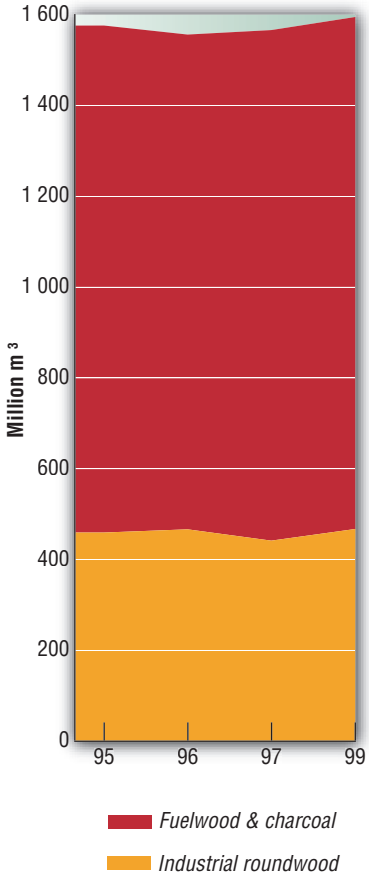
World roundwood production in 1999 (excluding storm-felled material) is estimated to have increased by 2% above 1998, while the increase in industrial roundwood production was higher at 2.4%. In the developing world, fuelwood continues to account for over 70% of total roundwood production *(Figure 1)*.

Both the value and volume of trade in industrial roundwood were significantly affected by the Asian crisis. The impact was most severe for those producers dependent on the Asian markets, particularly that of Japan. There, tropical logs are beginning to lose market share to softwoods, particularly from Russia and the Baltics. In China, though, demand for tropical logs remains strong.

FAO's Patrick Durst and Chris Brown provided an illuminating account of the distribution of plantations worldwide. They noted that forest plantations currently account for only a small proportion of the world's total forest area; Asia is home to almost half. *Figure 2* shows the most recent (1995) data on plantation area by region (not withstanding data uncertainties as alluded to earlier).

Perhaps more revealing than the global distribution figures is the fact that just a few countries possess the bulk of the forest plantations. FAO reports that five countries—China, USA, Russian Federation, India and Japan—have each established more than 10 m hectares of forest (again, notwithstanding the uncertainties). Together, these countries account for 65% of the world's forest plantation area.

Figure 1: Fueling development?
Developing-country roundwood production, 1995–99



The conference heard about several ITTO plantation-related projects in the Philippines. In 1995, DENR initiated 'Plantation establishment methods' under ITTO PROJECT PD 130/91 REV.2 (F). This 2-year project in the watershed of the Magat River in Bayombong, Nueva Viscaya, tested combinations of five site preparation designs and four nursery fertiliser and rhizobium innoculant application treatments on 100 hectares of plantation. The aim was to determine the most effective means for establishing tropical forest plantations involving four species (*Gmelina arborea*, *Swietenia macrophylla*, *Pterocarpus indicus* and *Albizia saman*).

Building upon this initiative, ITTO PROJECT PD 21/97 REV.2 (F) is now implementing

a community-based forest management strategy to manage the forest resource in the same watershed, expanding the plantation area and introducing agroforestry and natural regeneration techniques in degraded forests.

The economics of plantations

Regardless of the type of benefit expected (whether commercial, social, environmental or a combination of these), developing plantations involves the creation of a fixed physical capital asset. Like any investment, planted forests require sacrificing current consumption for the production of goods and services in the future. In this respect, forest plantations have some specific characteristics: as a land use form, there is no opportunity for change over a long period of time and returns on investment may be delayed for several years.

Both the inherent risk in plantations and the delay on returns are major constraints to large-scale private investment in plantation forestry. Accordingly, several countries have introduced incentive schemes to attract investments. In his presentation, Jeremy Williams described the evolution and effectiveness of incentive schemes in Chile, India and Indonesia. These three countries offer contrasting examples of the usefulness and effectiveness of government financial incentives for plantation establishment. Chile and Indonesia intended the plantations to supply fibre for an export-oriented industry. In both cases, powerful industrial sectors have been developed. In contrast, India's main objective for establishing plantations is to provide the ecological and social benefits associated with a healthy tree cover.

As Dr Williams pointed out, "financial incentives for plantation establishment have proven to be effective but they require supporting policies and conditions to be successful. In particular, secure tenure and other conditions that eventually make the investment attractive without the subsidy are important. Indeed, one measure of success appears to be a diminishing need for subsidisation; Chile, as well as Australia and New Zealand, no longer offer extensive subsidies now that their forest industries are globally competitive".

Plantation sustainability

Julian Evans convincingly addressed the issue of the sustainability of plantation productivity in successive rotations. He examined evidence world-wide—but focused on developing countries—to address four elements of sustained productivity:

- what changes to a site may plantation forestry induce and hence threaten future rotations?
- what risks are tree plantations exposed to?
- what factual evidence is there for and against productivity change over time?
- what silvicultural interventions can help sustain yields?

Dr Evans concluded that while plantations do affect sites and under certain conditions may cause site deterioration, tree plantations are not inherently unsustainable. Care with harvesting, the conservation of organic matter and management of the weed environment are critical features to minimise nutrient loss and damage to the soil. He found no widespread evidence that plantation forestry is unsustainable, despite the fact that measurements of yield in successive rotations are now becoming available. Where yield decline has been reported, poor silvicultural practices appear to have been largely responsible.

Any conference on plantation development must make reference to New Zealand and several papers were devoted to the radiata pine 'story'. While it hasn't all been plain sailing, the story is now definitely upbeat, at the same time yielding valuable information for others embarking on plantation development.

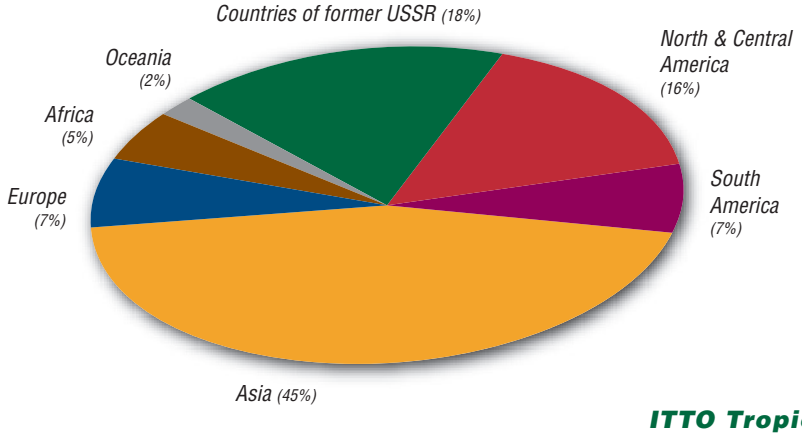
One paper—by Arthur Trewin—made a particular impression. Its topic was quality assurance procedures for plantations, which admittedly sounds dry and technical and not very sexy. But the paper was illuminating. According to Trewin, best results from plantation establishment are obtained when all nursery propagation and field planting operations are integrated and documented, with quality checks at all operational stages. Initial field growth should be monitored in quality assurance indicator plots to assess the success of establishment procedures and to help identify early growth problems.

It may be a pipe-dream, but perhaps one day all serious plantation efforts will follow such an approach. It would certainly help solve the problem of unreliable data, which remains the plague of good planning everywhere.

The full text of the 25 papers presented is to be published along with the conference recommendations.

Contact: *ICTPD Conference Organisers, Forest Management Bureau, Department of Environment and Natural Resources, Visayas Avenue, Diliman, Quezon City, the Philippines; Tel 632–926 2141; Fax 632–920 8650; sotniuqm@wtouch.net*

Figure 2: Skewed
Global distribution of forest plantations by region



Letters

Scope for more tree-planting

Sir

I refer to the article 'A future for forests?' by Juergen Blaser and Jim Douglas (TFU 10/4, pp 9–14). It states that forests currently cover some 33 million km² of the earth. With an estimated world population of 6 billion, this works out to just over half a hectare of forest per person. The quoted 26% of land area covered by forests worldwide is already less than the minimum cover below which I was taught (based on European experience) one could expect problems. With the world population expected to rise fast before levelling off in about 40 years time at 12 billion, will there be any safety margin if the area of forests remains constant? There will be continuous pressure to convert forest to agriculture so that we can feed the extra population.

The article also quotes FAO figures (for 1999) that show the demand for fuelwood outstripping all other uses of wood put together. However, the fuelwood estimate of 1.8 billion m³ per year is probably low. It is difficult to cook 1 kg of food using less than 1 kg of fuelwood. I estimate that about 4 billion people rely on fuelwood for cooking their food; if so, fuelwood consumption must be closer to 4 billion tons per year.

I do not believe that mankind will survive unless it has access to enough forest to supply its demands. There is certainly plenty of scope for tree-planting: for fuelwood (which takes about 10 years to grow), for pulpwood (which takes about 20 years), and for saw and veneer wood—in descending order of magnitude.

K.D. Marten
Hamilton, New Zealand

15 January 2001

Ghana's efforts should be recognised

Sir

I applaud and share the wish expressed by Mr Poku and Mr Vlosky to see Ghana's situation improve (Letters, TFU 10/4, p 29). But I was saddened that they do not seem to be fully aware of the enormous efforts that are being made to ensure a future for Ghana's forests. Indeed, their anxieties are well recognised in Ghana's forestry sector.

It is comparatively easy to espouse policy formulation, industrial coordination, greater stakeholder involvement, production efficiencies, improved technology, the greater use of lesser known species, and so on. All may be eminently desirable but, in reality, are much more difficult to achieve on the ground. Nevertheless, we are making significant progress in many regards.

Ghana has worked for years to improve its forest management. An inventory of the national forest reserves was started in 1986 and completed in 1993. By 1996, the Forest Resource Management Project had evolved the management requirements for existing forest reserves, imposing 40-year felling cycles, tree selection, minimum felling diameters, and regulations for roads and the protection of watersheds and soil. A unique conservation status system has been applied to every forest tree species. The annual allowable cut has been set at a sustainable 1 million m³ and is kept under review.

Outside the forest reserves, other approaches place a mixture of responsibilities and rewards on the local communities who ultimately determine what happens to their lands in the High Forest Zone. New forms of contract place greater environmental and social obligations on logging companies. Concession allocation will increasingly favour those demonstrating a combination of responsibility towards the forest and local communities and the drive and ability to develop more efficient wood industries.

The institutions serving the sector have been re-organised to enhance cooperation. A restructured Forestry Commission has now incorporated the Forest Service Division, the Widlife Division, the Timber Export Development Division, and the Forest Products Inspection Division.

Ghana has been fortunate in attracting practical assistance from a number of external donors in evolving forest management and improving the forest industry sector. Notable among these has been the UK Government's Department of International Development, which has had a team of forest experts working on the ground with our own forestry professionals since the early 1980s. This has amply demonstrated the benefits of continuity of effort.

Illegal logging has been greatly reduced. A study by the International Institute for Environment and Development *(Falling into place—Ghana, a policy that works for forests and people)* shows that illegal logging had been reduced to 4% of the national annual cut by the end of 1996 and efforts continue to reduce this still further. Over the last two years, Ghana has had enough confidence in its forest management to explore the prospects for independent certification related to the principles, criteria and indicators developed by ITTO.

As your correspondents noted, the export of logs from natural forest was halted in 1995. This was in response to an unprecedented demand from Asian markets, which threatened to undermine hard-won progress in forest management. The overstocking of export logs and the process of log auctions to which Mr Poku and Mr Vlosky refer were once-only situations of some six years ago and are now history.

Timber companies have reacted positively to the ban. More than 50% of sawn wood exports are kiln-dried and the proportion of machined wood and components continues to rise, creating more skills and increasing the sector's contribution to our vulnerable national economy. Last year, one-third of Ghana's wood exports was in the form of veneer and plywood.

The gap between producers and end users, to which your correspondents refer, is something that will continue to be a subject of debate. Again, the difference between theory and practice becomes apparent. Ghana's timber is sold in more than 40 countries. The range of species and their different physical characteristics mean they are finding their way into a very wide

Obituary

Distinguished forester Dr Stanley Dennis Richardson died in Nelson, New Zealand on 23 November 2000

DENNIS RICHARDSON, as he was known, did much to revolutionise forestry research in New Zealand and abroad. Born in Lincolnshire, England, he became the director of the New Zealand Forest Research Institute at the age of 36. Within five years, his energy, vision and keen intellect had transformed a sleepy institution into one of the country's foremost scientific establishments.

As a teacher, Dr Richardson was unconventional, encouraging students to question established thinking. He taught at the University of Aberdeen from 1954 to 1960 and held a professorship at the University of Wales from 1966 to 1974, where he headed the Department of Forestry and Wood Science. Under his direction, it became a leading centre of wood technology research.

He was also professor and head of the Department of Forestry at the University of Technology in Papua New Guinea from 1980 to 1982.

Dr Richardson worked with the Asian Development Bank overseeing aid projects in the Asia-Pacific region, as well as with the United Nations Food and Agriculture Organisation, the World Bank and the World Food Programme. In his later years he was part of a New Zealand team advising the Turkish government on forestry research.

In 1992 he was made an honorary member of the Society of American Foresters, an honour awarded to only a handful of non-Americans. He also wrote three books, including *Forestry, people and places: selected writings from five decades*, published shortly before his death (see *TFU* 10/4 p 28).

Dr Richardson moved to Motueka, New Zealand, with his wife Dr Janet Richardson in 1985. He is survived by his wife, son, two daughters and eight grandchildren.

This is an edited version of an obituary that appeared in the Nelson Evening Mail *on 16 December 2000.*

A personal tribute

In May last year I received a letter from Dennis Richardson. He wrote: "Since you had the misfortune to go to Bangor (University) and not Aberdeen you will not know that the motto of the latter is *Initium sapientiae timor domini*". Roughly translated, this means: 'the fear of your teachers is the beginning of wisdom'. Dennis went on to say that even though I was not indoctrinated in this maxim, he hoped I could help him promote his latest book.

It was certainly no misfortune of mine to have studied at Bangor, because it brought me into contact with Dennis, who lectured there until the mid 70s, and his lovely wife, Janet. Dennis touched the lives of many students, but I was lucky enough to not only benefit from his inspired lecturing and, later, his guidance as a research student, but also to count him as a dear friend and mentor.

Dennis didn't actually subscribe to the Aberdeen motto. I can't believe he was ever fearful of his teachers; nor did he inspire fear in his own students. Rather, his strength of character was greatly admired. He was an iconoclast, a stubborn and prickly character who loved to challenge established norms and reactionary institutions. He was also fervent about poverty and the incapacity of the 'system' to address it. At times he seemed reckless in his statements—but usually he was right!

Dennis's passing is a sad loss to his friends, of whom there are many around the world. I am proud to say I was taught by Dennis and am lucky that the thread of friendship remained unbroken through all these years. Goodbye, my friend.

Michael Adams
ITTO Secretariat

variety of end uses. Add to this the nature of Ghana's timber industry, which is made up of relatively small companies with limited finance, and the reality is that there are limits to the degree to which the knowledgeable importing and distributing networks in overseas markets can be discarded. When it comes to finished goods like furniture, then the picture changes, but marketing takes a narrower focus, too.

Work is being done to improve managerial and technical skills through the Wood Industries Training Centre and the efforts of externally assisted programs. However, the essence of private enterprise is soundly financed entrepreneurial drive, not centralised planning. Ghana tried the latter through state ownership of timber companies and it didn't work; the state is now moving to divest itself of such companies. What Ghana's forestry sector needs most is external private investment and partnerships—increased capital and technical flows—to assist the growth of a sound wood manufacturing industry.

Alhassan Attah
Manager
Timber Export Development Division
Forestry Commission of Ghana
London, UK
6 February 2001

Topical and tropical

Edited by Alastair Sarre

Controversial study on Brazil

A paper published in the 19 January 2001 edition of *Science* on the future of the Brazilian Amazon has been generating considerable controversy in the media. Britain's *Independent* newspaper, for example, featured the story on its front page under the headline "Death sentence for the Amazon". Brazilian authorities have condemned the paper as "ecological futurology".

The authors of the paper—William Laurance at the Smithsonian Tropical Research Institute and seven co-authors from American and Brazilian research institutions—projected the effects of planned infrastructure development projects, many of which are being fast-tracked under the 'Avança Brasil' ('Advance Brazil') program, on processes of deforestation and degradation. They developed models to integrate current spatial data on deforestation, logging, mining, highways and roads, navigable rivers, vulnerability to wildfires, protected areas, and existing and planned infrastructure projects. They also assessed the past impacts of highways and roads on Amazonian forests and used those analyses to predict the pattern and pace of forest degradation over the next 20 years. They generated two different scenarios, labelled 'optimistic' and 'non-optimistic', which predict the spatial distribution of deforested or heavily degraded land as well as moderately degraded, lightly degraded and pristine forests.

The 'optimistic' scenario, under which the extent of degraded zones around highways, roads, rivers and infrastructure projects are relatively localised, suggests that by the year 2020 'pristine' forests will constitute about 28% of the Brazilian Amazon, 'lightly degraded' forests another 28% and deforested or heavily degraded areas another 28%. Under the 'non-optimistic' scenario, pristine forests will be reduced to just 4.7% of the region, while lightly degraded forest will constitute about 24%. Nearly 42% of the region will be deforested or heavily degraded.

Models necessarily rely on a raft of assumptions (such as the extent of 'degradation zones' around developments like roads, powerlines and gaslines), many of which are highly debatable. Perhaps the most useful outcome of the present controversy would be a mature debate. If the extent of deforestation and degradation predicted is realistic, what can be done to avoid it? And is the world prepared to pay for development opportunities foregone?

Remote sensing gets closer

The June 2000 issue of the *Journal of Forestry*—a publication of the American Society of Foresters—focuses on the application of remote sensing technologies in forestry. Although North American in orientation, the issue contains some excellent papers of relevance to tropical forestry. Remote sensing in forestry is not new: one paper notes that the mapping of forest vegetation from aerial photographs was first attempted in the 1850s using a camera mounted on a hot-air balloon. But rapid advances in digital imagery, continued growth in computer processing power, and the launching of a new generation of satellites will provide more and cheaper remote sensing data than ever before. The key to making optimal use of such data, according to one paper, is the integration of new and existing remote sensing technologies and collaborative implementation at both the technical and decision-making levels.

On the same theme, a paper available on the web by Edmond Nezry and co-authors introduces a technique for estimating standing timber volume using satellite imagery. The technique was able to accurately replicate the results of a ground survey in Sarawakian forests where standing timber volume was 0–200 m^3, but became unreliable in forests with a standing volume of more than 260 m^3. The paper can be downloaded at www.treemail.nl/download/sci-00.pdf

New chief for INRENA

A new head was recently appointed to the Peruvian National Institute for Natural Resources (INRENA). Mr Matias Prieto Celi succeeds Dr Josefina Takahashi (the incoming chairperson of the International Tropical Timber Council).

FSC and NTCC to work together

The Forest Stewardship Council (FSC) and the Malaysian National Timber Certification Council (NTCC) are conducting a joint study to compare the Malaysian criteria, indicators, activities and standards of performance (MC&I) with FSC standards, according to press reports. The MC&I were finalised and adopted after wide consultation in 1999 and have been undergoing field-testing since then.

Rise and fall of Nigerian forestry

A paper by R.G. Lowe published in the April 2000 edition of *The Nigerian Field* contains a well-written and informative history of Nigerian forestry. It details the influence of colonial foresters, who brought the experiences of India and Burma to bear on the Nigerian tropical forests. Trial and error brought improvements in silviculture, but a lack of funds and interest in forestry in recent years has led to a deterioration of the forestry resource. The interval between fellings in natural forest has been reduced to ten years or less and trees with diameters of 30–40 cm are now being cut. The author advocates a return to federal supervision and management of the forests, greater community participation in protection and management, and the establishment of buffer zones outside the forest reserves.

Reprints can be obtained from Dr Lowe at: 464a Bradgate Rd, Newtown Linford, Leicestershire LE6 0HA, England; RG_LOWE@BARCLAYS.NET

Noticeboard

Illegal logging: reinforce existing reserves first

Strengthening existing forest conservation reserves may be a first step to combating illegal logging in Indonesia.

This suggestion was made during a meeting in Jakarta last December between the Indonesian Minister of Forestry, Dr Nur Mahmudi Ismail, and ITTO's Executive Director, Dr Manoel Sobral Filho.

The meeting was held to plan an ITTO mission to the country, one of the purposes of which is to assist in the formulation of an action plan with 'strong measures' to combat illegal logging.

Speaking after his meeting with the minister, Dr Sobral said that Indonesia had taken great strides in declaring many conservation areas in tropical forests, including two large parks on the border with Malaysia on the island of Borneo.

"Such efforts deserve ongoing support by the international community; after all, many of the values of tropical forests are of global significance," he said.

"With a relatively small amount of money, we can help ensure that such values are protected from illegal activities while at the same time rewarding local communities in their efforts to maintain the forest."

Dr Sobral said that Dr Nur Mahmudi agreed that Indonesia should continue to collaborate with ITTO to develop more such projects in support of the protection of tropical forest conservation areas.

Post-master course in natural resource management

This one-year, full-time residential course at the Indian Institute of Forest Management in Bhopal is designed for those interested in the sustainable development of forest ecosystems and the environment. It is intended for middle-level professionals and personnel working in government, non-government, research and teaching organisations with a two-year master's degree or equivalent degree/diploma. Candidates must be sponsored by their employers with confirmation that their present jobs will continue after course completion. The course starts in the middle of each year and costs US$5 000 for foreign nationals and Rs10 000 for Indian nationals. Please address all correspondence to: Coordinator, mrm Admissions, Indian Institute of Forest Management, PO Box 357, Nehru Nagar, Bhopal 462 003 (M.P.), India; Tel 91–755–775 716; 91–755–772 878; deep@iifm.org; www.iifm.org

Forestry masters and short courses in the Netherlands

The Larenstein International Agricultural College offers an 18-month MSc in Tropical Forestry. The course aims to prepare participants for a future management position in forestry in the commercial and public sectors. It focuses on the management of forest resources from ecological, economic and socioeconomic perspectives. Four different specialisation options are offered: commercial forestry, social forestry, protected area management, and natural resources management. Partial participation by attending specific modules is possible (see below). The cost is €6 850.

Short courses

Larenstein offers short courses in: 1) social forestry; 2) commercial forestry; 3) protected area management; and 4) natural resources management over the period 7 January–9 March 2002. They are open to anyone holding a BSc in tropical forestry or natural resources management and with a good command of the English language. The cost of each course is €1 800.

Contact: *International Masters Program, Larenstein International Agricultural College, Box 9001, 688 0GB Velp, the Netherlands; Fax 31–26–361 5287; masters@larenstein.nl*

Community forestry tour

The Edinburgh Centre for Tropical Forests is organising a tour of successful community forestry in France and Germany on 18–29 June 2001 (and again on similar dates in 2002). The tour, which is intended for mid-career professionals from both temperate and tropical countries, is designed and led by Patrick Hardcastle, who has organised and led similar tours since 1982. The all-inclusive cost will be in the range £950–£1 500. For more information contact Kerry-McKay@ectf-ed.org.uk or pdhardcastle@ compuserve.com

Information on CD

The Indonesian Ministry of Forestry has produced a multi-media CD in Bahasa Indonesian and English that provides basic information about Indonesia's forests and their administration. For example, it contains information about the Ministry, concessionaire recalculation, current Indonesian forest policy work, and the country's conservation reserve network. It also includes several nice video clips of Indonesian wildlife. To obtain a copy write to pusdata@dephut.cbn.net.id

Making contact

I would like to make contact with researchers or organisations dealing with forest taxation and forest revenue-sharing systems for sustainable forest management.

Tieguhong Julius Chupezi

Preferred language: English

Centre for the Promotion of Private Initiatives in Rural Development (cepird), BP 20413, Yaounde, Cameroon; cepirdn@yahoo.fr

I work in the field of agro-industry in the upper tropical rainforest region of Peru and would like to exchange information and experiences with professionals with similar interests, particularly in relation to non-timber resource use.

Luis Martinez Osorio

Preferred language: Spanish

Juilo Aguirre 468 Pamplona, Lima 29, Peru; Tel 51–01–466 8214; moinsa@latinmail.com

Useful sites on the internet

Peru's biodiversity

Peru's national strategy for the conservation and sustainable use of biological diversity has a website maintained by the National Council for the Environment (CONAM). It contains information about the strategy, including its objectives, as well as information on the country's protected areas.

www.conam.gob.pe/endb

Language: Spanish

ITTO on-line

ITTO's website contains many key ITTO documents, including the TFU in English, Spanish and French, ITTO's *Criteria and indicators for sustainable management of natural tropical forests*, the Organization's *Manual for the application of criteria and indicators*, and news items on the recent work of the Organization.

www.itto.or.jp

Language: English, with many items also in French and Spanish

Courses

Facilitation skills for community forestry

21 May–1 June 2001 **Bangkok, Thailand**
Cost: US$2 595

By the end of this course, participants will be able to: identify the value of participation and its implications for community forestry in their own situations; explain the concept of facilitation and identify the key skills needed to facilitate diverse interest groups; develop and improve skills in group facilitation for various applications in participatory forest management; and develop an action plan that identifies how skills can be improved in their own work situation.

Contact: *Dr Somsak Sukwong, Executive Director, Regional Community Forestry Training Center for Asia and the Pacific, PO Box 1111, Kasetsart University, Bangkok 10903, Thailand; Tel 662–940 5700; Fax 662–561 4880; ftcsss@nontri.ku.ac.th; www.recoftc.org*

Conflict resolution in forest resource management

November 2001 ***(two weeks)*** **Bangkok, Thailand**
Cost: US$2 400

The multiple demands on forest resources in developing countries often result in conflict over user and tenure rights between NGOs, local communities, governments and concessionaires.

In this course, participants will develop skills in: the analysis of conflicts; setting goals and planning strategies; conflict resolution techniques, from two-party negotiations to multi-party meeting processes; and conflict management through working groups among stakeholders. Moreover, participants will learn to take a proactive role in order to address conflicts before they occur. The course will also promote the concept of local people's participation in forest resource management and conservation.

Contact: *Dr Somsak Sukwong, Executive Director, Regional Community Forestry Training Center for Asia and the Pacific, PO Box 1111, Kasetsart University, Bangkok 10903, Thailand; Tel 662–940 5700; Fax 662–561 4880; ftcsss@nontri.ku.ac.th; www.recoftc.org*

Forest roading course

22 September–6 October 2001 **Gympie, Australia**
Cost A$7 700

This course provides a detailed 'hands on' approach to the planning, building, maintenance and decommissioning of forest roads within the context of reduced impact logging. Participants will be exposed to a mix of practical theory and forest-based activities using appropriate heavy machinery and roading materials. The course is aimed at managers of unsurfaced forest roads and will provide a complete overview of the best practices in road construction with basic machinery and materials.

Contact: *Maria Geppert at URS Forestry, Tel 61–2–6248 6900; Fax 61–2–6248 6999; maria_geppert@urscorp.com*

17th international seminar on forest and natural resources administration and management

26August–13 September 2001
Colorado, Arizona, North Carolina and Washington, USA
Cost: US$5 000

Jointly offered by Colorado State University and the US Forest Service International Programs Office, this seminar is designed for senior natural resource management professionals. The 19-day program focuses on strategies and methods for developing, managing and conserving natural resources for the sustained delivery of goods and services to meet the full range of human needs. For more information and application details, visit www.fs.fed.us/global/is/isfam/welcome.htm or write to Ann Keith, College of Natural Resources, Colorado State University, Fort Collins, CO 80523-1401, USA; ifs@cnr.colostate.edu

2001 international seminar on protected area management

9–25August 2001 **Missoula, MT USA**
Cost US$4 500

This seminar, jointly offered by the Universities of Montana, Idaho and Colorado State, and the US Forest Service International Programs Office, is geared for senior level managers and policy makers working in protected areas. The program will examine and stimulate debate on management strategies, policies and innovative institutional arrangements to address the conservation and use of the world's most special places. For more information and application details, visit: www.fs.fed.us/global/is/ispam/welcome.htm or write to Dr Jim Burchfield, School of Forestry, The University of Montana, Missoula, MT 59812, USA; jburch@forestry.umt.edu

Use of geographic information systems

10–14 September 2001 **Reading, UK**
Cost: £575

This workshop introduces the various parts of an integrated geographic information system. The use of GIS as a tool for analysis and to assist decision-making is highlighted. Practical work will use the GIS packages ARCVIEW and IDRISI to demonstrate some aspects of analysing spatial data.

Contact details below.

Research data management

23–27 July 2001 **Reading, UK**
Cost: £575

This workshop emphasises the importance of good data management in research projects and considers the question 'is a spreadsheet sufficient, or do we need a database?' It aims to give a comprehensive grounding in the use of both MS-Access and MS-Excel and considers the relative merits of each in relation to complex data structures in development projects.

Contact details below.

Tools for the measurement of poverty

13–24 August 2001 **Reading, UK**
Cost: £1 150

This workshop is aimed at those involved in management decision-making about development processes, interventions and projects. Participants are not required to have detailed statistical or computing knowledge, although the contents will be equally relevant to those directly involved in information management.

Contact: *Mrs Lorna Turner, Statistical Services Centre, University of Reading, Harry Pitt Building, Whiteknights Road, PO Box 240, Reading RG6 6FN UK; Tel 44–(0)118–931 8025; Fax 44–(0)118–975 3169; stats-workshops@reading.ac.uk; www.reading.ac.uk/ssc*

By featuring these courses, ITTO doesn't necessarily endorse them. Potential applicants are advised to obtain further information about the courses of interest and the institutions offering them.

Meetings

13–20 April 2001. **9th Australasian Conference on Tree and Nut**. Perth, Australia. ***Contact:*** *David Noel, Tree Crops Centre, Subiaco, WA, Australia; Tel 61–8–9388 1965; Fax 61–8–9388 1852; davidn@aoi.com.au; www.aoi.com.au/acotanc*

18–21 April 2001. **Congress on the Prevention and Combating of Forest and Grassland Fires in the Mercosur Region**. Villa Carlos Paz, Argentina. ***Contact:*** *Prof. Norbeto Ovando, Asociación Amigos de los Parques Nacionales, calle Esmeralda 605 piso 3 (CP 1007), Buenos Aires, Argentina; Fax 54–11–4322 5060; ongparquesnacionales@yahoo.com*

18–25 April 2001. **16th Commonwealth Forestry Conference.** Fremantle, Australia. ***Contact:*** *Libby Jones, UK Forestry Commission, 231 Corstorphine Road, Edinburgh EH 12 7AT, UK; Tel 44–(0)–131–314 6137; Fax 44–(0)–131–334 0442; libby.jones@forestry.gov.uk*

27 April–6 May 2001. **Madexpo Internacional 2001.** Quito, Ecuador. ***Contact:*** *AIMA/ Asociacion Ecuatoriana de Industriales de la Madera, Avs Amazonas y Republica, Edif. Las Camaras piso 7, Quito, Ecuador; Tel 593–2–439 559; Fax 593–2–439 560; aima@andinanet.net; www.ecuadorforestal.com*

30 April–3 May 2001. **Joint Symposium for Tropical Silviculture and Tree Seed Technology.** Los Baños, Philippines. IUFRO 1.07.00 and 2.09.00. ***Contact:*** *Ike Tolentino, Institute of Renewable Natural Resources, University of the Philippines Los Baños, College, Laguna 4031, Philippines; Tel 63–49–536 2599* ***or*** *63–49–536 3206; eltj@mudspring.uplb.edu.ph*

8–9 May 2001. **International Conference on Sustainable Commercial Forestry and Independent Certification in China.** Shanghai, China. ***Contact:*** *Jessica Rice, Forest Trends; Tel 1–202–530 2020; Fax 1–202–530 2021; jrice@forest-trends.org* ***or*** *Shirley Dai, Chinese Research Center for Ecological and Environmental Economics (RCEEE), Chinese Academy of Social Sciences; Tel/fax 86–10–6492 8713; shirleydai@cinet.com.cn*

11–12 May 2001. **Market-based Approaches to Sustainable Forestry Development and Forestry-based Poverty Alleviation: Global Trends and Implications for China.** Beijing, China. ***Contact:*** *Jessica Rice, Forest Trends; Tel 1–202–530 2020; Fax 1–202–530 2021; jrice@forest-trends.org* ***or*** *Dr Jintao Xu (or representative), Center for Chinese Agricultural Policy, Chinese Academy of Sciences; Tel 86–10–6217 6604* ***or*** *86–10–68977322; Fax 86–10–6217 8579; jintaoxu@public3.bta.net.cn*

28 May–2 June 2001. **30th Session of the International Tropical Timber Council and Associated Sessions of the Committees.** Yaounde, Cameroon.

28 May–3 June 2001. **Building Bridges with Traditional Knowledge II.** Honolulu, USA. ***Contact:*** *University of Hawaii at Manoa, Dept of Botany, 3190 Maile Way, Room 101, HI 96822-2279, Honolulu, Hawaii, USA; Tel 1–808–356 7203; Fax 1–808–956 3923; bbt2@hawaii.edu; www.traditionalknowledge.com*

6–9 June 2001. **Public & Private Sector Partnerships: the Enterprise Governance.** University of the Twente, the Netherlands. ***Contact:*** *Mrs Monica Moseley, Administrator, Sheffield Hallam University Press, Learning Centre, Adsetts Centre, City Campus, Sheffield S1 1WB, UK; Fax 44–114–225 4478; m.moseley@shu.ac.uk*

11–13 June 2001. **International Conference on Ex Situ and In Situ Conservation of Commercial Tropical Trees.** Yogyakarta, Indonesia. Sponsored by ITTO. ***Contact:*** *Ms Soetitah S. Soedojo, ITTO PROJECT PD 16/ 96 REV.4 (F), Faculty of Forestry, Gadjah Mada University, Bulaksumur, Yogyakarta 55281, Indonesia; Fax 62–274–902 220; itto-gmu@yogya.wasantara.net.id*

12–16 June 2001. **Managing the Second Cycle of Tropical Forests.** Balikpapan, Indonesia. ***Contact:*** *Berau Forest Management Project, Gedung Mnaggala Wanabakti, Block IV, 7th Floor, Jln. Jend. Gatot Subroto, 10270 Jakarta, Indonesia; Tel/fax 6221–572 0204/5; bfmpconf@cbn.net.id; www.bfmp.or.id*

17–21 June 2001. **1st International Youth Workshop: Livestock, Environment and Sustainable Development. (Ganaderia, Ambiente y Desarrollo Sostenible.)** Matanzas, Cuba. ***Contact:*** *Gertrudis Pentón Fernàndez, Secretaria Ejecutiva, EEPF 'Indio Hatuey', Central España Republicana, CP44280, Matanzas, Cuba; Tel 53–5–37 7482; Fax 53–52–53101; gertrudis@indio.atenas.inf.cu*

18–24 June 2001. **Workshop on New Trends in Wood Harvesting with Cable Systems for Sustainable Forest Management in the Mountains.** Ossiach, Austria. FAO/ECE/ILO. ***Contact:*** *Joachim Lorbach, FAO; Tel 39–(0)6–5705 2724; Fax 39–(0)6–5705 5618; joachim.lorbach@fao.org*

2–4 July 2001. **First International Conference on Trees and Timber.** Essex, UK. ***Contact:*** *Simon Evans, Anglia Polytechnic University; s.h.evans@anglia.ac.uk*

10–12 July 2001. **International Symposium on Mangroves.** Tokyo, Japan. ***Contact:*** *Nobutaka Hanagata, Research Centre for Advanced Science and Technology; hanagata@bio.rcast.u-tokyo.ac.jp; www.bio.rcast.u-tokyo.ac.jp/ symposium*

11–19 July 2001. **Travelling Workshop on Linking the Complexity of Forest Canopies to Ecosystems and Landscape Function.** Portland and Corvallis, USA. IUFRO 2.01.12. ***Contact:*** *Michael G. Ryan, USDA/FS Rocky Mountain Research Station, 240 West Prospect RD, Fort Collins, CO 80526-2098, USA; Tel 1–970–498 1012; Fax 1–970–498 1027; mryan@lamar.colostate.edu*

22–27 July 2001. **Tree Biotechnology: the Next Millennium.** Skamania Lodge, Stevenson, Washington, USA. ***Contact:*** *Dr Steven Strauss, Forestry Sciences Lab 020, Department of Forest Science, Oregon State University, Corvallis Oregon 97331-7501 USA; Tel 1–541–737 6558; Fax 1–541–737 1393; strauss@fsl.orst.edu; www.cof.orst.edu/cof/extended/conferen/*

12–15 August 2001. **Supply Chain Management for Paper and Timber: 2nd World Symposium for Logistics in the Forest Sector.** Vaxjo, Sweden. ***Contact:*** *Kim Sjostrom, Chief Technologist, Anjas 3 A 33, 02230 Espoo, Finland; Tel 358–405–500 780; sjostrom@technologist.com; honeybee.helsinki.fi/logistics/main.htm*

12–18 August 2001. **Forest Modelling for Ecosystem Management, Forest Certification and Sustainable Management.** Vancouver, Canada. ***Contact:*** *Dr. Valerie LeMay, Dept of Forest Resources Management, 2045–2424 Main Mall, University of British Colombia, Vancouver BC V6T 1Z4 Canada; Tel 1–604–822 4770; Fax 1–604–822 9106; forestmd@interchange.ubc.ca; www.forestry.ubc.ca/forestmodel*

12–14 September 2001. **Dynamics of Forest Insect Populations.** Aberdeen, Scotland. IUFRO 7.03.07. ***Contact:*** *Dr Andrew Liebhold, USDA Forest Service, Northeastern Forest Experiment Station, Forestry Sciences Laboratory, 180 Canfield St, Morgantown, West Virginia 26505, USA; Tel 1–304–285 1609; Fax 1–304–285 1505; sandy@gypsy.fsl.wvnet.edu; iufro.boku.ac.at/iufro/iufronet/*

3–14 September 2001. **Developing the Eucalyptus of the Future.** Valdivia, Chile. IUFRO. ***Contact:*** *Dr Roberto Ipinza, Universidad Austral de Chile, PO Box 1241, Valdivia, Chile; Tel 56–63–216 186; Fax 56–63–224 677; ripinza@valdivia.uca.uach.cl; www.infor.cl/iufro2001*

9–14 September 2001. **5th International Flora Malesiana Symposium.** Sydney, Australia. ***Contact:*** *Dr Barry Conn, Royal Botanic Gardens Sydney, Mrs Macquaries Road, Sydney NSW 2000, Australia; fmv@rbgsyd.gov.au; plantnet.rbgsyd.gov.au/fm/fm.html*

23–28 September 2001. **International Conference on Advancing Community Forestry: Innovations and Scaling up Experiences.** Chiang Mai, Thailand. ***Contact:*** *Dr Somsak Sukwong, Executive Director, Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC), Kasetsart University, PO Box 1111, Bangkok 10903, Thailand; Fax 662–561 4880; ftcsss@ku.ac.th; www.recoftc.org*

24–29 September 2001. **The Art and Practice of Conservation Planting.** Taipei, Taiwan Province of China. IUFRO 1.07.00; 1.17.00. ***Contact:*** *Ching-Te Chien, Taiwan Forestry Research Institute, 53 Nan-Hai Road, Taipei, Taiwan 10051; Fax 886–2–2389 5531; chien@serv.tfri.gov.tw*

October 2001. **The Future of Perennial Crops: Investment & Sustainability in the Humid Tropics.** Côte d'Ivoire. ***Contact:*** *Dominique Nicolas, CIRAD, Boulevard de la Lironde, 34398 Montpellier Cedex 5, France; Tel 33–4–6761 6569; Fax 33–4–67 56 59; nathalie.mercier@cirad.fr*

1–3 October 2001. **Tropical Forestry Research in the New Millennium – Meeting Demands and Challenges.** Kuala Lumpur, Malaysia. ***Contact:*** *Ms Jeannie Ng/Ms Kenanga Simon, Asian Strategy & Leadership Institute, Level 14, Menara Sunway, Jalan Lagoon Timur, Bandar Sunway, 46150 Petaling Jaya, Selangor Darul Ehsan, Malaysia; www.frim.gov.my/CFFPR2001.html*

8–11 October 2001. **Forestry Meets the Public: an International Seminar.** Ruttihubelbad, Switzerland. ***Contact:*** *Martin Buchel, Chief, Bases and Training, Swiss Forest Agency, Ch-3003 Berne, Switzerland; Tel 41–31–324 7783; Fax 41–31–324 7866; martin.buechel@buwal.admin.ch*

9–12 October 2001. **2001 International Symposium on Value Accounting of Forestry Environment.** Beijing, China. Sponsored by ITTO. ***Contact:*** *Executive Chair, Mrs Yuling, Institute of Scient-tech Information, Chinese Academy of Forestry, Wan Shou Shan, Beijing, China; Tel 86–10–6288 8322; Fax 86–10–6288 4836; yuling@isti.forestry.ac.cn; www.forestry.ac.cn*

29 October–3 November 2001. **31st Session of the International Tropical Timber Council.** Yokohama, Japan.

11–16 November 2001. **XV Latin American Congress of Soil Science.** Cuba. ***Contact:*** *Dr R. Villegas Delgado, Ave Van Troi No. 17203, Boyeros, Havana CP 19210, Cuba; Tel 53–7–579076; Fax 53–7–666036; XV@inica.edu.cu*

21–28 September 2003. **XII World Forestry Congress.** Quebec City, Canada. ***Contact:*** *XII World Forestry Congress, PO Box 7275, Charlesbourg, Quebec G1G 5E5, Canada; www.wfc2003.org*

Point of view

Getting with IT in development assistance

A key role of overseas development assistance is to bridge the digital divide. The achievement of sustainable development may depend on it

by Kaoru Ishikawa

Deputy Director General

Economic Affairs Bureau

Japanese Ministry of Foreign Affairs

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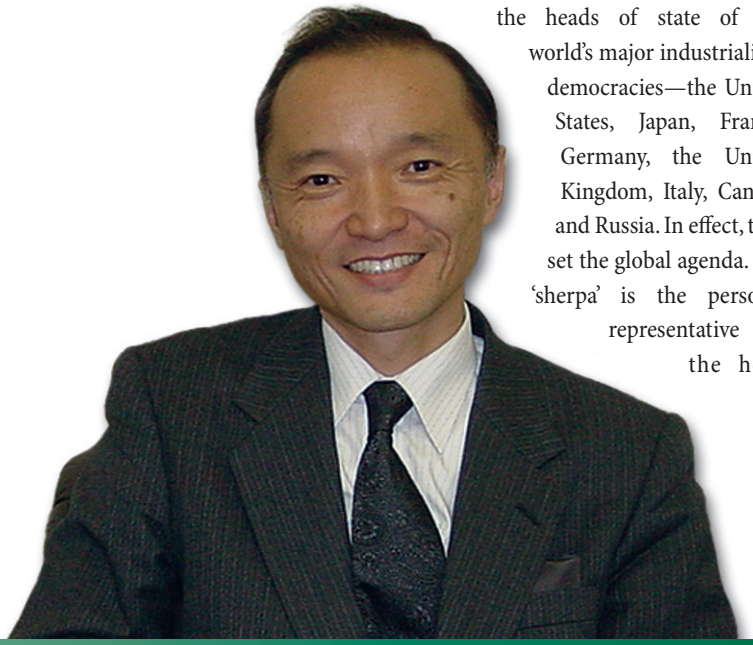
GONBE HUNTED geese, and his father and grandfather had taught him that he should only catch one goose per day and no more. But one day he had a splendid idea: why bother with just one goose per day when he could catch a hundred? So he put a hundred traps in the pond. And he said, "aha, with this I will be wealthy and happy and I won't have to work so hard". Very soon, he had trapped 99 geese, but the hundredth goose didn't appear. He waited, but it still didn't come. So he decided to check. He went out onto the pond; suddenly, the hundredth goose grabbed him and flew up into the sky. And Gonbe was taken away.

This ancient story from Japanese folklore is told to children, but it is about sustainable development. Many of us in the so-called industrialised countries have forgotten our ancestors' wisdom and we are paying the price—in terms of pollution, in terms of a deteriorating environment.

Gonbe's greed was his undoing, but poverty is also a major component of today's deforestation. Think about a poor farming family living on the edge of the forest. There are three boys: as they grow up, what can the second and third sons do? How do they earn a living and support families of their own? One of the few options they have is to go to the forest, cut the trees and make farmland. The same thing happened in 18th and 19th century Europe—the second and third sons improved their lives at the expense of others when they settled the 'new' lands of America, Africa, Asia and Australia. So we must find ways for the new generation to improve their lives without destroying their environments.

What the industrialised countries are doing

Last year I was the 'Foreign Affairs sous-sherpa' for the so-called G8 summit held in Okinawa. These meetings are held every year to bring together the heads of state of the world's major industrialised democracies—the United States, Japan, France, Germany, the United Kingdom, Italy, Canada and Russia. In effect, they set the global agenda. The 'sherpa' is the personal representative of the head of government or state and as his deputy one of my tasks was to prepare the statements issued after the meeting in coordination with the other G8 member countries.



The G8 leaders recognise the ecological and economic importance of mangroves and have pledged to take more action for their protection.

The G8 process (then called the G7) started in response to the first oil crisis a quarter of a century ago, and its role has evolved since then. For example, after the invasion of Afghanistan by the Soviet army, it had a strong political character. The leaders first talked about globalisation at the summit held in Lyon, France in 1996, and we have continued that dialogue since then. So the G8 tries to lead the world and set the agenda, while at the same time treating sympathetically those countries that lag behind in economic development.

At the Okinawa summit, the leaders decided that they would talk about, and did talk about, three main subjects: how to bring the world greater prosperity—that is the economic aspect of world affairs; how to improve the well-being of people—I might call this the social aspect of world affairs; and how to achieve greater world security—the political aspect of world affairs. Of course, there is considerable overlap between these three items, an overlap that can be seen in the treatment of environmental matters at the summit. The leaders acknowledged that the environment

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